THE GOBLIN SPIDER GENUS *BRIGNOLIA* (ARANEAE, OONOPIDAE)

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CONTENTS

Abstract 3
Introduction 3
Collections Examined 9
Brignolia Dumitresco and Georgesco 9
  Key to Species 12
  Pantropical Species 14
  New World Species 32
  Old World Species 43
Acknowledgments 121
References 130
Index of Specific Names 131

ABSTRACT

Males of the goblin spider genus *Brignolia* Dumitresco and Georgesco have palps that are heavily sclerotized, resembling those found in males of the genus *Ischnothyreus* Simon. Nevertheless, these palps have the dorsal depression ("fenestra") previously considered synapomorphic for the genus *Opopaea* Simon (plus its likely synonym *Epectris* Simon), and the female genitalia also correspond closely to those of *Opopaea* species, with the addition of a posterior tube. *Brignolia* males lack the inflated and subbasally connected palpal patella characteristic of *Opopaea* (plus *Epectris*), and *Brignolia* is therefore hypothesized to represent the sister group of those taxa. The generic names *Lisna* Saaristo and *Aridella* Saaristo, each based on a single species from the Seychelle Islands, are newly synonymized with *Brignolia*. The type species, *B. cubana* Dumitresco and Georgesco, has attained a pantropical distribution, and has at least three earlier names; *Xestaspis parumpunctata* Simon from Sierra Leone, *Gamasomorpha perplexa* Bryant from the Virgin Islands, and *B. recondita* (Chickering) from Panama are each placed as senior synonyms of *B. cubana*. *Opopaea ambigua* Simon, from Sri Lanka, is transferred to *Brignolia*. A total of 26 new species are described. Two are from the New World (*B. dasysterna* from Florida, and *B. cobre* from Florida and the West Indies), but most are from southern Asia and the Indopacific region: *B. sinharaja* and *B. ratnapura* from Sri Lanka, *B. rothorum*, *B. cardamom*, *B. kumily*, *B. valparai*, *B. kaikatty*, *B. nilgiri*, *B. kodaik*, *B. jog,* and *B. karnataka* from southern India, *B. bengal*, *B. sukna*, *B. assam*, and *B. ankhu* from northern India and Nepal, *B. mapha*, *B. suthep*, *B. diablo*, and *B. chumphae* from Thailand, *B. schwendingeri* from Vietnam, *B. palawan* from the Philippines, and *B. gading*, *B. elongata*, and *B. kapit* from Borneo.

INTRODUCTION

The goblin spider genus *Brignolia* was established by Dumitresco and Georgesco (1983) for a species they described from the eastern tip of Cuba as *Brignolia cubana*. The palps of that species are distinctively small and extremely heavily sclerotized; because they are so much more heavily sclerotized than the rest of the animal, they present a "burnt" appearance (see the photograph on the cover). The species was soon found to be pantropical in distribution, rather than a Cuban endemic; Saaristo (2001) recorded it from the Seychelle Islands, and Saaristo and van Harten (2006) added records from Yemen. Burger (2009) and Platnick and Dupérré (2009) noted that *Opopaea recondita* Chickering (1951), described from Panama, is similar to, and might be a senior synonym of, *B. cubana*. In addition to being widespread and distinctive, the species can be remarkably abundant in some habitats; over 4,800 specimens are recorded below.

Dumitresco and Georgesco also included in *Brignolia* a species originally described from Sri Lanka as *Gamasomorpha nigripalpis* Simon (1893b), suggesting that *B. cubana* might be a natively Old World species that has been introduced into America. In that regard, *Brignolia* might thus resemble the genera *Opopaea* Simon (1891) and *Epectris* Simon (1893a), each of which is thought to be represented in America only by species introduced from the Old World (Platnick and Dupérré, 2009).

In the original description of *B. cubana*, Dumitresco and Georgesco (1983) indicated the type locality only as "Santiago de Cuba." Their specimens, however, were collected by T. Orghidan, whose published itinerary (Orghidan, 1973) indicates that they are from the "Station de l'Académie des Sciences" near Santiago de Cuba, now the Estacíon Ecológica Siboney. During a recent expedition to Cuba, the first author, along with Alexander Sánchez, Abel Pérez, and Giraldo Alayón, collected a male of *B. cubana* at the Siboney station. However, the *Brignolia* specimens collected at two other localities in eastern Cuba were surprising, as they do not belong to *B. cubana*.

Our subsequent sorting of the available collections indicated that although the vast majority of the New World *Brignolia* specimens do indeed belong to "*B. cubana*," at least two additional species occur in Florida and the West Indies. The fact that all three species have been collected at a single locality in far southern Florida increased the likelihood that the two additional species might also be introduced from the Old World. Testing that hypothesis has required an attempt at a worldwide revision of the genus. Although a sizable Old World fauna is documented below, the two additional New World species may well be endemic rather than introduced, as no Old World conspecifics have been found for either of them.

Although the "burnt" palps of male *Brignolia* species resemble those of males belonging to the genus *Ischnothyreus* Simon (1893c), female *Brignolia* are actually much more similar to those of *Opopaea*, as their dorsal abdominal scutum covers most of the abdomen (females of *Ischnothyreus*, like the males, typically have a much smaller dorsal scutum, as well as strong leg spines that are absent in *Opopaea* and *Brignolia*). Indeed, females of *Brignolia* are so similar to those of *Opopaea* that in their generic diagnosis for *Opopaea*, Platnick and Dupérré (2009) were able to cite only details of the genitalic conformation of the type species, *B. cubana*, to separate females of *Brignolia* and *Opopaea*.

Our revision indicates that those genitalic details apply only to the type species, not to the full range of *Brignolia* species. Indeed, a few females from southern Florida that were identified by Platnick and Dupérré as belonging to the widespread species *Opopaea deserticola* Simon (1891) have proven to belong instead to the new species described below as *B. dasysterna* and *B. cobre*, and we still have found no somatic characters to separate the females of these two genera.

Saaristo and Marusik (2008) hypothesized that the presence of a "fenestra" in the male palp is a synapomorphy of *Opopaea*. The "fenestra" is merely a depression on the dorsal or retrodorsal surface of the palp; it is distinctively deep in most species (Platnick and Dupérré, 2009: fig. 65), but the depression can be shallow (Platnick and Dupérré, 2009: fig. 103). Saaristo and Marusik (2008) maintained that the palpal "fenestra" is lacking in the single species they assigned to their new genus *Nale*, but scanning electron microscopy has shown that a typical palpal depression does occur in that species as well (Platnick and Dupérré, 2009: fig. 156). Platnick and Dupérré (2009: 30) therefore suggested that *Epectris* (an earlier generic name based on the same species as *Nale*) is probably just a junior synonym of *Opopaea*, rather than its sister group.

However, our investigations of *B. cubana* and the other species detailed below show that males of these species also have the same kind of palpal depression (figs. 32, 203). The female genitalia are also a close match to those of *Opopaea* and *Epectris*, with the same short, wide, T-shaped anterior process (figs. 71, 94). However, females of *Brignolia* species also have a posterior tube that is apparently lacking in those of *Opopaea* and *Epectris*; that posterior tube can be simple (figs. 136, 137) or twisted (figs. 71, 294).

These investigations also show that, no doubt as a result of its pantropical (and probably synanthropic) distribution, there are earlier names for *B. cubana*. The species has been described as a member of at least three other genera. Simon (1893b) described a female from Sierra Leone as *Xestaspis parumpunctata*; had Simon known the male of the species as well, he would presumably have placed it as a close relative of his Sri Lankan species *Gamasomorpha nigripalpis* (which Simon clearly realized was an atypical member of that genus, as he separated it from all its other members as his group B, in Simon, 1893c: 301–302). Bryant (1942) redescribed the species as *Gamasomorpha perplexa*, based on both sexes from St. Croix, and Chickering (1951) subsequently described a female from Panama as *Opopaea recondita* (because Chickering did not delimit *Opopaea* by its palpal synapomorphies, he might have misplaced the species in *Opopaea* even if he had recognized both sexes).

The species treated below show a wide array of specializations of the posterior portion of the carapace, the pedicel tube, the anterior portion of the abdomen, and the surface of the sternum, as well as some remarkable developments of the male and female genitalia. Some of the species are strikingly autapomorphic. Two of these relatively autapomorphic species from the Seychelle Islands were placed by Saaristo (2001, 2002) as the type species of the monotypic genera *Lisna* and *Aridella*. In both cases, Saaristo recognized the affinity of these species to those of *Brignolia*, and separated them only by autapomorphies that seem to be largely uninformative above the species level.

Just as in the spider family Linyphiidae, where such monotypic genera abound, these taxa often serve no classificatory purpose, and may artificially separate the type species from their closest relatives, rendering the groups containing those relatives paraphyletic. Although we have not found enough characters to support a fully resolved species-level cladogram for *Brignolia*, we have found several characters that are likely to be synapomorphic at various levels within the group, and hence informative about the validity of Saaristo's two generic names.

The monophyly of the assemblage including *Opopaea*, *Epectris*, *Brignolia*, *Lisna*, and *Aridella* is supported by both male and female genitalic characters (although only males are known for *Aridella*). The males are all united by the presence of a dorsal or retrodorsal depression on the palpal bulb (figs. 32, 203, 312; Platnick and Dupérré, 2009: figs. 65, 156); indeed, Saaristo (2002: 20) indicated that the male palp of one of his type species, *Aridella bowleri*, has two such palpal "windows." The females are united by an extremely wide and short anterior, T-shaped genitalic process (figs. 71, 94, 332; Platnick and Dupérré, 2009: figs. 92, 159).

Within this assemblage, the groupings of *Opopaea* + *Epectris* and of *Brignolia* + *Lisna* + *Aridella* are also each supported by male genitalic and somatic features. In *Opopaea* + *Epectris*, the male palpal patella is greatly expanded and attached subbasally to the palpal femur (Platnick and Dupérré, 2009: figs. 56, 146). In *Brignolia* + *Lisna* + *Aridella* the male palp lacks those synapomorphies, but is reduced in size and very heavily sclerotized ("burnt"). In addition, the males of *Brignolia* + *Lisna* + *Aridella* are united by a second putative synapomorphy, a distinctively broad anterior process on the palpal endites (figs. 28, 29, 113, 114, 163, 164). In *Opopaea*, as in many other oonopid genera, the process on the male endites is sharply pointed (Platnick and Dupérré, 2009: fig. 28). Interestingly, males of the type species of *Epectris* have blunt endite projections (Platnick and Dupérré, 2009: fig. 121) resembling those of *Brignolia* + *Lisna* + *Aridella*, despite their clearly *Opopaea*-like palps. In at least some species, the size and shape of the palpal depression seem to be a close match to the size and shape of the endite process (e.g., *B. cardamom*, fig. 346), and it is possible that during mating the structures may interlock and help fix the palp in position.

The separation of *Opopaea* + *Epectris* from *Brignolia* + *Lisna* + *Aridella* is also reflected in the female genitalia, as those of *Brignolia* and *Lisna* have a posterior tube (figs. 71, 221–223) that is apparently not found in *Opopaea* or *Epectris* (Platnick and Dupérré, 2009: figs. 69, 159; females of *Aridella* are unknown). Posterior genitalic tubes do occur in some other oonopids, including females of *Ischnothyreus*, *Triaeris* Simon (1891), *Xyphinus* Simon (1893a), and *Camptoscaphiella* Caporiacco (1934; see Baehr and Ubick, 2010: figs. 182–199), where they are often even more convoluted or squiggled. The polarity of this character will therefore depend on what taxa prove to be the closest relatives of the entire complex.

Within *Brignolia* + *Lisna* + *Aridella*, two groups of species can easily be distinguished by carapace morphology. In one group of species, the pars cephalica is relatively low and the pars thoracica slopes gradually to its posterior margin (figs. 101, 148, 301), just as in *Opopaea* + *Epectris* (Platnick and Dupérré, 2009: figs. 20, 124). Included in this set of species are *B. dasysterna* and *B. cobre* from the Caribbean, *B. nigripalpis*, *B. ambigua*, and *B. rothorum* from Sri Lanka and India, *B. ankhu* from Nepal, *B. mapha* and *B. suthep* from Thailand, and *B. palawan* from the Philippines. The remaining species seem to be united by an elevated pars cephalica, accompanied by a steeply sloping pars thoracica, resulting in a pars cephalica with the appearance of a posterior pair of high shoulders (figs. 7, 196, 247).

The type species of *Brignolia*, *Lisna*, and *Aridella* each show the elevated, high-shouldered carapace morphology that outgroup comparison with *Opopaea* + *Epectris* as well as other oonopids suggests is apomorphic. If so, and if we are correct about the monophyly of *Brignolia* + *Lisna* + *Aridella*, then the recognition of *Lisna* and/or *Aridella* as valid, separate genera would result in *Brignolia* being paraphyletic, if the latter genus is construed to include also the nine species with a low-shouldered carapace. This would be true no matter what combinations of high-shouldered species might be assigned to either *Lisna* or *Aridella*, and could be avoided only if the low-shouldered species were placed in a separate genus. We know of no characters that are unique to that set of nine species, however, and thus have no basis for assigning them to a new genus.

There is another carapace feature of interest in this context. In *Opopaea* and *Epectris*, the posterior edge of the carapace is reflexed, forming a relatively high plate that is closely appressed to, but separate from, the posterior surface of the pars thoracica (Platnick and Dupérré, 2009: figs. 24, 125). The same is true for *Brignolia* + *Lisna* + *Aridella,* and this character may eventually help place the entire assemblage. In *Opopaea* + *Epectris*, the dorsal edge of that reflexed posterior margin forms a smooth, rounded arc, and the same is true for some, but not all, species of *Brignolia* + *Lisna* + *Aridella*. All of the low-shouldered species resemble those of *Opopaea* + *Epectris* in this feature, but most of the high-shouldered species have a squared dorsal rim on the reflexed posterior margin (figs. 226, 242, 335, 349). Three of the high-shouldered species (*B. parumpunctata*, *B. trichinalis*, and *B. ratnapura*) still retain the rounded rim, and are thus presumably the most basal members of the high-shouldered species group.

Of interest is whether those three species might themselves form a monophyletic group, as *B. parumpunctata* and *B. trichinalis* are the type species of *Brignolia* and *Lisna*, respectively. The males of the widespread species *B. parumpunctata* have a bizarre modification of the anterior edge of the clypeus, which forms a median projection extending far over the base of the chelicerae (figs. 2, 21). Unfortunately, this seems to be just an autapomorphy of the species, as it does not occur in any of the other males discussed below. Based on genitalic structures, the Sri Lankan species *B. ratnapura* may well be the sister species of *B. parumpunctata*; the two share a rounded dorsal protrusion on the male palpal bulb (figs. 12, 280) and a highly twisted posterior tube in the female genitalia (figs. 71, 294). The type species of *Lisna*, however, has very differently constructed genitalia, with such obvious autapomorphies as an enlarged distal lobe on the male palpal bulb (figs. 199, 204) and a distinct postepigastric scape in females (figs. 220–223). Despite these notable autapomorphies, the characters discussed above suggest that recognizing *Lisna* as a valid genus would require restricting *Brignolia* to a group of just two species, *B. parumpunctata* and *B. ratnapura*, and placing all the remaining species detailed below elsewhere.

Some of the high-shouldered and squared-rimmed species show a further modification of the posterior carapace margin. In the three species described below from Borneo (*B. gading*, *B. elongata*, and *B. kapit*), both sexes have a pair of large, dark triangles descending from the top of the squared posterior rim (figs. 693, 727, 763). These are internal structures; scanning electron micrographs of the posterior rim show no trace of them (figs. 709, 712, 743). They seem to be pits that extend deeply into the cephalothorax from an obvious opening at the rear of the carapace (figs. 710, 713, 747); we suspect that the pits contain the openings of glands which produce a secretion that flows across the sides of the carapace, using the channels formed by the lateral striations on the carapace surface (figs. 727, 744). Our scans of the pits in both sexes of *B. kapit*, for example, show them almost completely plugged with this presumed secretion (figs. 780, 783).

Although the dark triangles are most obvious in the three Bornean species, such structures occur also in *B. schwendingeri* from Thailand (fig. 671) and *B. sinharaja* from Sri Lanka (fig. 242). Similar (but more diamond-shaped) darkenings occur in *B. bowleri* from the Seychelles (fig. 226), *B. assam* from northern India and Nepal (fig. 589), and *B. diablo* from Thailand (fig. 643). In some cases, the carapace pits can be seen easily in dorsal view, even with a light microscope (figs. 224, 587, 761), but in others, the pits are narrower and more slitlike (figs. 744, 747). The dark markings on the posterior rim seem likely to be further developments of slight thickenings on the sides of the dorsal rim that can be found in many of the other species (figs. 297, 335). These thickenings may be associated with glands and pits whenever they occur, as even low-shouldered species like *B. dasysterna* have carapace depressions in corresponding positions (figs. 112, 125). Histological work is needed to determine whether the species that lack large and obvious pits nevertheless have such glands opening at the rear of the pars thoracica.

All these modifications on the posterior part of the cephalothorax are matched by similar elaborations of structures on the pedicel, the anterior surface of the abdomen, and sometimes even the posterior edge of the sternum. In *Opopaea* and *Epectris*, the pedicel tube is typically supplied with a pair of anterolateral triangles, resembling cats' ears in appearance (Platnick and Dupérré, 2009: figs. 33, 34, 157). The pedicel triangles are present in most of the species considered below; they are significantly enlarged in *B. bengal* and *B. sukna* from northern India and Nepal (figs. 547, 571), and that enlargement might be synapomorphic. The triangles have seemingly been lost in six species (*B. cobre*, *B. trichinalis*, *B. nigripalpis*, *B. ambigua*, *B. palawan*, and *B. elongata*), but those species seem to be from very disparate parts of the cladogram and there seems to be no phylogenetic signal in the loss of the triangles.

The dorsolateral surfaces of the pedicel often bear conspicuous, plumose setae (figs. 35, 36, 119), which often match similarly plumose setae on the anterodorsal surface of the abdomen, but the phylogenetic significance of these plumose setae is indeterminate. Species of *Opopaea* and *Epectris* may have them on both the pedicel and abdomen, on the abdomen only, or on neither (Platnick and Dupérré, 2009: figs. 33, 34, 89, 90, 157). The pedicel setae are most abundant, and extend farthest ventrally on the pedicel, in *B. trichinalis, B. nigripalpis, B. rothorum,* and *B. karnataka*, where they can even assume a stellate appearance (figs. 194, 208).

The anterior surface of the abdomen is also highly modified in these genera. All species seem to have a transverse ridge situated on the epigastric scutum, above the pedicel, in both sexes. The ridge varies from being almost straight (as in *B. trichinalis*, *B. suthep*, and *B. palawan*, figs. 213, 635, 685), to slightly W-shaped (as in *B. parumpunctata* and *B. cobre*, figs. 5, 146), to deeply W-shaped (as in *B. cardamom*, fig. 337), in which case the anteromedian portion of the ridge is often (but not always, cf. *B. bowleri*, fig. 228) much weaker than the lateral portions (as in *B. kodaik* and *B. kapit*, figs. 474, 765). In some cases, there is also a second, more dorsal ridge on the scutum that does not extend as far to the sides as does the more ventral ridge (as in *B. parumpunctata* and *B. bowleri*, figs. 67, 228).

Here again, much the same range of variation seems to occur within *Opopaea* and *Epectris,* where the primary ridge can be almost straight or deeply W-shaped (Platnick and Dupérré, 2009: figs. 33, 34, 157) and the more dorsal ridge may be present or absent (Platnick and Dupérré, 2009: figs. 89, 90, 157). However, if the acquisition of a high-shouldered carapace and a square-rimmed posterior carapace margin are both apomorphies, then it is the deeply W-shaped scutal ridge type that is apomorphic, as all nine of the low-shouldered species, and all three of the high-shouldered but round-rimmed species, have a straight or nearly straight scutal ridge. The deeply W-shaped ridge type is found only within the high-shouldered and square-rimmed group, and is almost ubiquitous within that group. Only one of those species, *B. chumphae* from Thailand, seems to retain a more plesiomorphic scutal ridge morphology (fig. 655).

Specimens of *B. chumphae* have a shallow, triangular notch in the ventral edge of the pedicel tube (fig. 656), and a similarly shallow notch occurs in *B. diablo* (fig. 646). However, several of the high-shouldered, square-rimmed species share a much deeper and narrower notch in the same position, along the midline (figs. 352, 356). This seemingly synapomorphic character unites nine species: *B. cardamom*, *B. kumily*, *B. valparai*, *B. nilgiri*, *B. kodaik*, *B. jog*, *B. karnataka*, *B. bengal*, and *B. sukna*. Interestingly, most of the remaining high-shouldered and square-rimmed species (i.e., those that lack the deep pedicel tube notch) are united by the development of a different feature, the distinctively enlarged darkenings in the posterior carapace margin, and the associated pits, discussed above. Five species (*B. sinharaja*, *B. schwendingeri*, *B. gading*, *B. elongata*, and *B. kapit*) show the most elaborate development, with conspicuous darkened triangles in the posterior carapace margin (figs. 242, 261), whereas *B. bowleri*, *B. assam*, and *B. diablo* have less elaborate, more diamond-shaped indications of the carapace pits in that same position (figs. 226, 589, 643). Only one of the high-shouldered, square-rimmed species, *B. kaikatty* from India, seems to show no development of either the pedicel notch or the carapace pits.

The scutal ridge on the abdomen often has distinct tubercles situated opposite the pedicel triangles; these tubercles are seemingly formed by enlarged setal bases (as in *B. dasysterna*, fig. 119). In species with enlarged pedicel triangles, the tubercles on the abdominal ridge can be large enough to reach, and interdigitate with, the pedicel triangles (as in *B. bengal* and *B. sukna*, figs. 547, 571). The tubercles can even occur in species that have lost the pedicel triangles (such as *B. elongata*, fig. 745). Here again, though, the phylogenetic signal is indeterminate, as the tubercles can be present or absent in *Opopaea* and *Epectris* (Platnick and Dupérré, 2009: figs. 33, 34, 157).

In the Sri Lankan species *B. sinharaja*, males also have a pronounced ridge, situated posteriorly on the sternum, that bears three large tubercles on each side (fig. 244); females of this species have the ridge less pronounced, and with only small tubercles (fig. 262). A similar modification occurs in males of *B. assam* (fig. 590), but the ridge does seem to be present, if much less pronounced, in the males of many other species. Similarly, males of several species have distinctly darkened, egg-shaped patches behind the eyes (as in figs. 95, 142). Most of these species are high-shouldered taxa from India, but the character has seemingly evolved at least twice within the genus, as it also occurs in such low-shouldered species as *B. rothorum* from India, *B. dasysterna* from Florida, and *B. cobre* from the Caribbean. This feature also occurs in males of many *Ischnothyreus* species, presumably as a parallelism associated with the peculiar, burnt palpal morphology.

We conclude from the distributions of these characters that both *Lisna* and *Aridella* are best treated as junior synonyms of *Brignolia*, resulting in a group that appears to be monophyletic as well as the likely sister group of *Opopaea* + *Epectris*. There are other species included in the group that are fully as autapomorphic as are the type species of *Lisna* and *Aridella*. The bizarre, elaborate male palp (figs. 737, 738) and hugely elongated female genitalia (figs. 754, 759) of *B. elongata*, for example, or the outlandishly modified setae on the sternum of males of *B. dasysterna* (figs. 115, 116), or the extreme development of the posterior cephalothoracic pits in the five species mentioned above, are certainly just as distinctive as are the autapomorphies of *B. trichinalis* or *B. bowleri*. Promoting either *B. elongata*, or *B. dasysterna*, or the deeply-pitted group to an artificially high status as a separate genus would be just as misleading, phylogenetically, as are *Lisna* and *Aridella*. We regard both of those generic names as unfortunate byproducts of a strictly faunistic and "morphological distance"–based approach to systematics that seems unlikely to produce phylogenetically useful (and hence biologically predictive) results.

To summarize, we suggest that the interrelationships of the 31 species of *Brignolia* recognized below include the following clades, listed together with their putative synapomorphies:

Clade A: *B. sinharaja*, *B. schwendingeri*, *B. gading*, *B. elongata*, and *B. kapit* (large, darkened triangles in posterior carapace margin, representing large, deep pits at the rear of the pars thoracica);

Clade B: Clade A plus *B. bowleri*, *B. assam*, and *B. diablo* (dorsoventrally enlarged thickenings in posterior carapace margin);

Clade C: *B. bengal* and *B. sukna* (pedicel triangles greatly enlarged and touching enlarged tubercles on abdominal scutal ridge);

Clade D: Clade C plus *B. cardamom*, *B. kumily*, *B. valparai*, *B. nilgiri*, *B. kodaik*, *B. jog*, and *B. karnataka* (deep, narrow ventral notch in pedicel tube);

Clade E: Clades B and D plus *B. kaikatty* and *B. chumphae* (squared rim on posterior carapace margin);

Clade F: *B. parumpunctata* and *B. ratnapura* (rounded dorsal protrusion on male palpal bulb, highly twisted posterior tube in female genitalia);

Clade G: Clades E and F plus *B. trichinalis* (high-shouldered carapace);

Clade H: *B. nigripalpis* and *B. rothorum* (triangular projection on base of male palpal bulb, figs. 316, 806); and

Clade I (= *Brignolia*): Clades G and H plus *B. dasysterna*, *B. cobre*, *B. ambigua*, *B. ankhu*, *B. mapha*, *B. suthep*, and *B. palawan* (burnt palps, broad anterior process on male endites, and possibly the posterior tube in the female genitalia).

There are two additional species from the Seychelle Islands that were each described on the basis of a single female: *Opopaea probosciella* Saaristo (2001) and *Opopaea suspecta* Saaristo (2002). Although neither appears to be conspecific with any of the species detailed below, Saaristo's descriptions suggest that these females might belong to *Brignolia* rather than *Opopaea*; they may even be closely related to the new species *B. karnataka* from India. New specimens, or digestions of the abdomens of the female holotypes, will be needed to confirm Saaristo's generic placements of those two isolated females. In our opinion, such uncertainties are another unfortunate by-product of geographically limited faunistic studies; arachnology (like all branches of systematics) would benefit greatly if such inefficiently directed efforts were routinely replaced by clade-delimited, revisionary work.

Our methods follow those of Platnick and Dupérré (2009); the species are treated geographically, beginning in the New World and proceeding eastward. Only differences from the males (aside from the obvious absence of male endite modifications or the male darkened carapace patches) are mentioned in the descriptions of females. Because the male palps of these species are so heavily sclerotized, many details of their morphology are difficult to resolve using only light microscopy. We have therefore provided scans of the palps whenever possible; where material is scarce, we have used uncoated right palps for this purpose, and flipped the images for consistency. All measurements are in mm. Full color and high-resolution versions of the images, and a distribution map for each species, will be available on the goblin spider Planetary Biodiversity Inventory (PBI) project's website (http://research.amnh.org/oonopidae).

COLLECTIONS EXAMINED

AMNH	American Museum of Natural History, New York
BMNH	Natural History Museum, London
BSC	Centro Oriental de Ecosistemas y Biodiversidad, Santiago de Cuba
CAS	California Academy of Sciences, San Francisco
FMNH	Field Museum of Natural History, Chicago
JAB	J. A. Beatty collection, Carbondale, Illinois
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge
MHNG	Muséum d'Histoire Naturelle, Geneva, Switzerland
MNHN	Muséum National d'Histoire Naturelle, Paris, France
MRAC	Musée Royal de l'Afrique Centrale, Tervuren, Belgium
NMB	Naturhistorisches Museum, Bern, Switzerland
NML	Nationaal Natuurhistorisch Museum, Leiden, Netherlands
ZMUT	Zoological Museum, University of Turku, Finland

Brignolia Dumitresco and Georgesco

Brignolia Dumitresco and Georgesco, 1983: 107 (type species originally designated only via the heading "*Brignolia cubana* n. g. n. sp.").

Lisna Saaristo, 2001: 342 (type species by original designation *Gamasomorpha trichinalis* Benoit). NEW SYNONYMY.

Aridella Saaristo, 2002: 19 (type species by original designation *Aridella bowleri* Saaristo). NEW SYNONYMY.

NOTE: It could be argued that *Brignolia* Dumitresco and Georgesco (1983) is not an available name, because the original description does not specify a type species for the genus, and Article 13.3 of the International Code of Zoological Nomenclature requires that genus-group names published after 1930 include an original designation of the type species. Since its original description, *B. cubana* has been universally considered to be the type species of *Brignolia*; it was so listed, for example, in the Zoological Record for 1983 (Anon., 1985) and in the catalog by Platnick (1989).

Unfortunately, Dumitresco and Georgesco seem to have had rather limited understanding of the type concept. For example, in 1983, those authors proposed a new subfamily, Pseudogamasomorphinae, to contain just the genera *Triaeris* and *Ischnothyreus*; there is no genus named *Pseudogamasomorpha*, and Dumitresco and Georgesco (1983: 103, 114) also failed to indicate which of their two included genera they intended to be the type genus of their new subfamily. Similarly, Dumitrescu and Georgescu (1987: 98; the same authors, just using a different English spelling of their surnames) proposed a new genus *Prodysderina*, in which they placed two of Simon's species, again without specifying either one as the type species.

In the case of *Brignolia*, the discussion they presented of their new species *B. cubana* included a conjecture that the species resembles one described from Sri Lanka as *Gamasomorpha nigripalpis* by Simon (1893b), and they even indicated (1983: 107) that "Ainsi, l'ancienne espèce *G. nigripalpis* devient *Brignolia nigripalpis* (Simon)." Because that transfer was made in running text, and the paper had no abstract or other mention of the action, it seems to have been overlooked by all subsequent workers.

Although the original description of *Brignolia* does not include an unambiguous designation of a type species, there is a heading ("*Brignolia cubana* n. g. n. sp.") of the sort identified by Article 13.4 of the International Code of Zoological Nomenclature. That article states that "The combined description or definition of a new nominal genus or subgenus and a single included new nominal species, if marked by "gen. nov., sp. nov." or an equivalent expression, is deemed to confer availability on each name under Article 13.1.1." The *Brignolia* example demonstrates that this wording was carefully chosen. If the article had been limited simply to the combined description of a new genus and a single included species, then *Brignolia* would clearly be unavailable, since a second species was included. But the wording is instead "and a single included *new*" species (emphasis added), and Dumitresco and Georgesco included only a single *new* species in their genus.

There is little doubt that Dumitresco and Georgesco based their concept of *Brignolia* on *B. cubana*; indeed, it is highly unlikely that they ever examined any specimens of *Gamasomorpha nigripalpis*. Given that the wording of Article 13.4 was apparently intended to cover cases of this type, and that Dumitresco and Georgesco apparently intended *B. cubana* to be the type species, we accept *Brignolia* Dumitresco and Georgesco (1983) as an available name.

Should others disagree, the authorship and availability of the name would devolve to the next subsequent publication that specifies the type species and includes diagnostic information or a bibliographic reference to the diagnostic information supplied by Dumitresco and Georgesco (1983). Although Article 69.1.2 allows subsequent designations of type species (for genus-group names established before 1931) to be made in literature-recording publications, Article 14 does not allow anonymous publications like the Zoological Record (Anon., 1985) to make nomenclatural acts available. The authorship and date of *Brignolia* would therefore devolve to Platnick (1989: 148), and the name would still have priority over both *Lisna* and *Aridella*.

DIAGNOSIS: Males are most likely to be confused with those of *Ischnothyreus,* because of their heavily sclerotized, darkened palps, but lack the conspicuous anterior leg spines found in that genus; they can easily be separated from those of *Opopaea* and *Epectris* by the normal palpal patellae, which are not enlarged and are basally, rather than subbasally, connected to the palpal femur. Females are most likely to be confused with those of *Opopaea* and *Epectris*, and we know of no somatic characters that consistently separate members of these genera. We suspect that the presence of a posterior tube in the female genitalia separates *Brignolia* from *Opopaea,* but the accuracy of that hypothesis will be strongly tested by forthcoming revisions of the highly speciose and widespread genus *Opopaea*.

DESCRIPTION: Total length of males 1.1–2.2, of females 1.3–2.4. Carapace usually pale orange to orange-brown, rarely darker, males sometimes with dark brown egg-shaped patches behind eyes; sternum and mouthparts pale orange to orange-brown; abdominal scuta pale orange to orange-brown, soft portions of abdomen white, without color pattern; legs yellow to pale orange; palps of females yellow to pale orange, of males dark red-brown. CEPHALOTHORAX: Carapace ovoid in dorsal view (figs. 17, 50), pars cephalica slightly or strongly (figs. 18, 51) elevated, anteriorly narrowed to 0.49 times its maximum width or less, with angular posterolateral corners (figs. 23, 56), posterolateral edge with or without pits; posterior margin not bulging below posterior rim, anterolateral corners with strongly sclerotized, triangular extension, posterolateral surface without spikes, surface of elevated portion of pars cephalica smooth (figs. 19, 52), sides striated (figs. 20, 53), thorax without depressions, fovea absent, without radiating rows of pits; lateral margin straight, rebordered, without denticles; posterior margin rounded (figs. 22, 55) or squared; plumose setae near posterior margin of pars thoracica absent; nonmarginal pars cephalica setae dark, needlelike, scattered; nonmarginal pars thoracica setae dark, needlelike; marginal setae dark, needlelike. Clypeus margin strongly rebordered, in front view either straight, slightly sinuous, or slightly downcurved at sides (fig. 54), vertical in lateral view, high, ALE separated from edge of carapace by their radius or more; setae present, dark, needlelike; median projection (figs. 2, 21) present only in males of *B. parumpunctata*. Chilum absent. Eyes six, well developed, usually subequal in size, rarely with ALE largest; usually ALE oval, PME squared, PLE oval; ALE usually separated by their radius to their diameter, ALE-PLE separated by less than ALE radius, PME usually touching throughout most of their length, separated from PLE by less than PME radius; posterior eye row usually slightly recurved (rarely straight) from above, slightly procurved from front. Sternum longer than wide, coloration uniform, fused to carapace, with radial furrows between coxae I–II, II–III, III–IV (figs. 27, 59), those furrows sometimes consisting of rows of small pits, radial furrow opposite coxae III absent; cuticle smooth but surface sometimes with small or large pits covering most of surface except near midline, sickle-shaped structures absent, without posterior hump but posterior margin extending posteriorly beyond anterior edges of coxae IV as single extension, sometimes with strong posterior ridge, which may bear enlarged tubercles (only strong ridges noted in species descriptions); lateral margin with infracoxal grooves, grooves with anterior and posterior openings; distance between coxae approximately equal; extensions of precoxal triangles present, lateral margins unmodified; setae sparse, dark, needlelike, densest laterally, originating from pits in species with pits; hair tufts absent; anterior margin of males with slight, continuous transverse groove, with median concavity only in male *B. bowleri* and *B. sinharaja*. Chelicerae slightly divergent, anterior face unmodified; without teeth on promargin or retromargin (figs. 25, 26, 57, 58); fangs without toothlike projections, directed medially, shape normal, without prominent basal process, tip unmodified; setae dark, needlelike, evenly scattered; paturon inner margin with scattered setae, distal region unmodified, posterior surface unmodified, promargin with row of flattened setae, inner margin unmodified, laminate groove present. Labium triangular, anterior margin indented at middle; with six or more setae on anterior margin, subdistal portion with unmodified setae, fused to sternum (figs. 28, 60), usually same as sternum in sclerotization. Endites distally not excavated, serrula present in single row (figs. 29, 30, 61, 62), those of males more strongly sclerotized than sternum, anteromedian tip with stout projection, projection usually bearing two sensillae, posteromedian part unmodified. Female palp without claw or spines (figs. 63, 64), tarsus unmodified, tibia with three trichobothria (fig. 65), patella without prolateral row of ridges. ABDOMEN: Ovoid, without long posterior extension, rounded posteriorly, interscutal membrane without rows of small sclerotized platelets. Supposed book lung covers small, ovoid, protuberant, without setae, anterolateral edge unmodified. Posterior spiracles connected by groove.

Pedicel tube short, scutum not extending far dorsal of pedicel, matted setae on anterior ventral abdomen in pedicel area absent, cuticular outgrowths near pedicel absent; pedicel tube usually with small, dorsolateral, triangular extensions (figs. 36, 68, but those extensions lost in *B. cobre*, *B. trichinalis*, *B. nigripalpis*, *B. ambigua*, *B. palawan*, and *B. elongata*, enlarged in *B. bengal* and *B. sukna*), with deep ventral notch in *B. cardamom*, *B. kumily*, *B. valparai*, *B. nilgiri*, *B. kodaik*, *B. jog*, *B. karnataka*, *B. bengal*, and *B. sukna*; soft portions of abdomen with setae. Dorsal scutum strongly sclerotized, without color pattern, usually covering full length of abdomen, usually with no soft tissue visible from above, not fused to epigastric scutum, anterior half without projecting denticles; middle surface, sides punctate. Epigastric scutum strongly sclerotized, surrounding pedicel, not protruding, small lateral sclerites absent, without anterolateral joints in females; plumose hairs present dorsal and lateral of pedicel; scuto-pedicel region with one or two transverse ridges, primary ridge (figs. 35, 67) varying from straight to deeply W-shaped. Postepigastric scutum strongly sclerotized, long, semicircular, covering nearly full length of postepigastric area, fused to epigastric scutum in males, anterior margin unmodified, with short posteriorly directed lateral apodemes. Spinnerets (scanned only in *B. parumpunctata*, figs. 37, 73): ALS with one major ampullate spigot and two piriform gland spigots (figs. 38, 74), PMS with single spigot in males (fig. 39), two spigots in females (fig. 75), PLS with two spigots in males (fig. 40), four spigots in females (fig. 76). Spinneret scutum present, incomplete ring with fringe of long setae; supraanal scutum absent. Dorsal setae dark, needlelike; epigastric setae uniform, dark, needlelike; postepigastric setae dark, needlelike; dense patch of setae anterior to spinnerets absent. Colulus absent. LEGS: Without color pattern; femur IV not thickened, same size as femora I–III, patella plus tibia I shorter than carapace, tibia I unmodified, tibia IV specialized hairs on ventral apex present, tibia IV ventral scopula absent, metatarsi I, II mesoapical comb absent, metatarsi III, IV ventral scopula absent. Leg spines absent. Superior claws with few large, proximally situated teeth on lateral surfaces, more numerous, smaller, more basally situated teeth on medial surfaces, without inferior claw (figs. 24, 45–48, 81–84). Trichobothria bases longitudinally narrowed, aperture internal texture not gratelike (fig. 72). Tarsal organ of legs I, II, palp with three sensillae (figs. 41, 42, 49, 66, 77, 78), of legs III, IV with two sensillae (figs. 43, 44, 79,80). GENITALIA: Male epigastric region with sperm pore small, oval, situated at level of anterior spiracles, rebordered (fig. 34); furrow without Ω-shaped insertions, without setae. Palp minute, strongly sclerotized, right and left palps symmetrical; embolus dark, prolateral excavation absent; trochanter normal size, with ventral projection that can be low, rounded or long, narrow (figs. 31, 32); femur without posteriorly rounded lateral dilation, attaching to patella basally, often unusually small; patella not enlarged, often sharply bent, without prolateral row of ridges, setae unmodified; tibia usually shorter than patella; cymbium narrow in dorsal view, completely fused with bulb, no seam visible, not extending beyond distal tip of bulb, plumose setae absent, without stout setae, without distal patch of setae; bulb more than twice as long as cymbium, slender, with dorsal or retrodorsal depression (fig. 33). Female postepigastric area sometimes with external modifications (fig. 69); internal genitalia with anterior, short, wide, T-shaped sclerite and posterior tube (figs. 70, 71).

DISTRIBUTION: Pantropical; in the New World, found from Mexico, Florida, and the West Indies south to Brazil; in the Old World, found from West Africa to South Asia, the Indo-Pacific region, and Australia, but much of this broad distribution is due to the anomalously pantropical distribution of the type species, which we presume is synanthropic.

SYNONYMY: Arguments for regarding *Lisna* and *Aridella* as junior synonyms are presented in detail in the Introduction.

KEY TO SPECIES OF *BRIGNOLIA*

1. Males with median clypeal enlargement extending over base of chelicerae (figs. 2, 21) and palpal bulb with curled dorsal projection forming complete circle (figs. 9–

16); female postepigastric region with elevated disk resembling upside-down tulip (figs. 69, 93) . . . . *B. parumpunctata*

– Males without median clypeal enlargement; dorsal projection on palpal bulb otherwise (if rounded, not forming complete circle, figs. 277–280); female postepigastric region without elevated disk 2

2. Pars cephalica only slightly elevated, pars thoracica sloping gradually to posterior margin (figs. 101, 148) 3

– Pars cephalica strongly elevated, pars thoracica sloping steeply (figs. 196, 247) 15

3. Males (those of *B. ankhu*, *B. mapha*, *B. suthep*, and *B. palawan* unknown) 4

– Females (those of *B. ambigua* unknown) . . . 8

4. Median portion of sternum with elaborate setae (figs. 98, 115, 116) . . . . . *B. dasysterna*

– Median portion of sternum with ordinary setae only 5

5. Distal portion of palpal bulb relatively small, much lower than cymbium (figs. 150–160); Florida and West Indies . . . . *B. cobre*

– Distal portion of palpal bulb relatively large, as high as cymbium (as in figs. 303–306, 311, 312); Sri Lanka and India 6

6. Base of palpal bulb with triangular projection (figs. 307, 316) 7

– Base of palpal bulb without triangular projection . . . . *B. ambigua*

7. Tip of palpal bulb directed ventrally (figs. 303–306). . . . . *B. rothorum*

– Tip of palpal bulb directed dorsally (figs. 803, 804) . . . . *B. nigripalpis*

8. Postepigastric region with anteriorly directed projection originating near posterior spiracular groove (figs. 331, 629, 639, 820). 9

– Postepigastric region without such a projection 12

9. Postepigastric region with anteriorly directed projection triangular (figs. 331, 629, 820). 10

– Postepigastric region with anteriorly directed projection forming low arch (fig. 639) . . . . *B. suthep*

10. Postepigastric region with posteriorly directed projection originating near posterior margin of epigastric furrow (fig. 331); India . . . . *B. rothorum*

– Postepigastric region without such a projection 11

11. Anteriorly directed projection on postepigastric region relatively small (fig. 820) . . . . *B. nigripalpis*

– Anteriorly directed projection on postepigastric region relatively large (fig. 629). . . . . *B. mapha*

12. Postepigastric region with posteriorly directed projection originating near posterior margin of epigastric furrow (fig. 619). . . . . *B. ankhu*

– Postepigastric region without such a projection 13

13. Posterior tube of female genitalia extending posteriorly, distally narrow (figs. 136–141, 689, 690) 14

– Posterior tube of female genitalia extending dorsally, distally enlarged (figs. 184–189). . . . . *B. cobre*

14. Postepigastric region with procurved ridge situated anteriorly to posterior spiracular groove (figs. 689, 690); Philippines . . . . *B. palawan*

– Postepigastric region without such a ridge (figs. 136–141); Florida . . . . . *B. dasysterna*

15. Posterior carapace margin rounded (figs. 192, 216, 271, 287) 16

– Posterior carapace margin squared (figs. 226, 242, 335, 369) 17

16. Palpal bulb with distinct distal lobe (figs. 199, 204); epigastric region with long scape (figs. 220–223); Mauritius and Seychelles, possibly Sri Lanka . . . . *B. trichinalis*

– Palpal bulb with rounded dorsal projection (figs. 277–280); epigastric region without scape (figs. 293, 294); Sri Lanka . . . . *B. ratnapura*

17. Pedicel tube with deep, narrow ventral notch (figs. 351, 352, 356, 357, 372, 389, 390) . . 18

– Pedicel tube with ventral margin entire (fig. 328) or at most a shallow notch (fig. 646). 30

18. Transverse ridge on epigastric scutum above pedicel with enlarged tubercles reaching to anterolateral triangles on pedicel tube (figs. 547, 571, 575); northern India and Nepal. 19

– Transverse ridge on epigastric scutum above pedicel with tubercles smaller, not reaching to pedicel triangles (figs. 351, 389); southern India 20

19. Distal portion of palpal bulb relatively short, with ridged, translucent dorsal projection (figs. 533–539); females unknown . . . . *B. bengal*

– Distal portion of palpal bulb relatively long (figs. 560–564); females with short, dorsally directed posterior genitalic tube (fig. 586). . . . . *B. sukna*

20. Males (those of *B. karnataka* unknown). . 21

– Females (those of *B. valparai* and *B. jog* unknown). 26

21. Palpal bulb relatively long, with distinct, narrowed “neck” (figs. 375, 507) 22

– Palpal bulb relatively short, thick (figs. 341, 409) 23

22. Palpal bulb narrowed at tip (figs. 375–378) . . . . *B. kumily*
– Palpal bulb widened at tip (figs. 506–509) . . . .*B. jog*
23. Palpal bulb with dorsal lobe long, low (figs. 411, 452, 480) 24
– Palpal bulb with dorsal lobe short, high (figs. 341–344). . . . . *B. cardamom*
24. Dorsal margin of palpal bulb distinctly incised (figs. 409, 411) . . . . *B. valparai*
– Dorsal margin of palpal bulb not incised (figs. 452, 480) 25
25. Tip of palpal bulb incised near dorsal margin (fig. 483). . . . . *B. kodaik*
– Tip of palpal bulb incised near ventral margin (fig. 455). . . . . *B. nilgiri*
26. Postepigastric region with ridge or triangle originating near posterior spiracular groove (figs. 365, 468, 496) 27
– Postepigastric region without modifications originating near posterior spiracular groove (figs. 399, 523) 29
27. Postepigastric region with triangle originating near posterior spiracular groove (figs. 365, 468) 28
– Postepigastric region with ridge originating near posterior spiracular groove (fig. 496) . . . . *B. kodaik*
28. Postepigastric region with triangle originating near posterior spiracular groove relatively wide (fig. 365). . . . . *B. cardamom*
– Postepigastric region with triangle originating near posterior spiracular groove relatively narrow (fig. 468) . . . . *B. nilgiri*
29. Postepigastric region with large, triangular sclerotization extending from posterior margin of epigastric groove (fig. 523) . . . .*B. karnataka*
– Postepigastric region without sclerotization extending from posterior margin of epigastric groove (fig. 399) . . . . *B. kumily*
30. Posterior margin of carapace with conspicuous, distinctly widened, lateral sclerotizations (figs. 242, 643) 32
– Posterior margin of carapace uniform in width (figs. 427, 653) 31
31. Dorsal lobe on palpal bulb with rounded margin (fig. 437); females unknown; southern India . . . . *B. kaikatty*
– Dorsal lobe on palpal bulb with angular margin (fig. 663); females unknown; Thailand . . . . *B. chumphae*
32. Lateral sclerotizations in posterior margin of carapace triangular (figs. 242, 671) 33
– Lateral sclerotizations in posterior margin of carapace diamond shaped (figs. 226, 589, 643) 37
33. Triangular sclerotizations in posterior margin of carapace relatively short (figs. 242, 727). 34
– Triangular sclerotizations in posterior margin of carapace relatively long (figs. 671, 693, 763) 35
34. Male palpal bulb enormously elongated (fig. 738); female genitalia reaching almost to tip of postepigastric scutum (fig. 754); Borneo . . . . *B. elongata*
– Male palpal bulb normal (fig. 250); female genitalia confined to anterior third of postepigastric scutum (fig. 264); Sri Lanka . . . . *B. sinharaja*
35. Posterolateral corners of carapace with enlarged tubercles (figs. 767, 779, 791). . . . *B. kapit*
– Posterolateral corners of carapace without such tubercles (figs. 675, 697, 709) 36
36. Triangular sclerotizations in posterior margin of carapace curved, reaching almost to pedicel (fig. 671); Vietnam . . . . *B. schwendingeri*
– Triangular sclerotizations in posterior margin of carapace straight, shorter (figs. 693, 717); Borneo . . . . *B. gading*
37. Posterior margin of pars cephalica with distinct horns (figs. 641–643, 647) . . . *B. diablo*
– Posterior margin of pars cephalica without such horns (figs. 230, 593) 38
38. Tip of palpal bulb directed dorsally (figs. 234, 235); females unknown; Seychelles . . . .*B. bowleri*
– Tip of palpal bulb directed distally (figs. 597, 598); females unknown; northern India and Nepal. . . . . *B. assam*

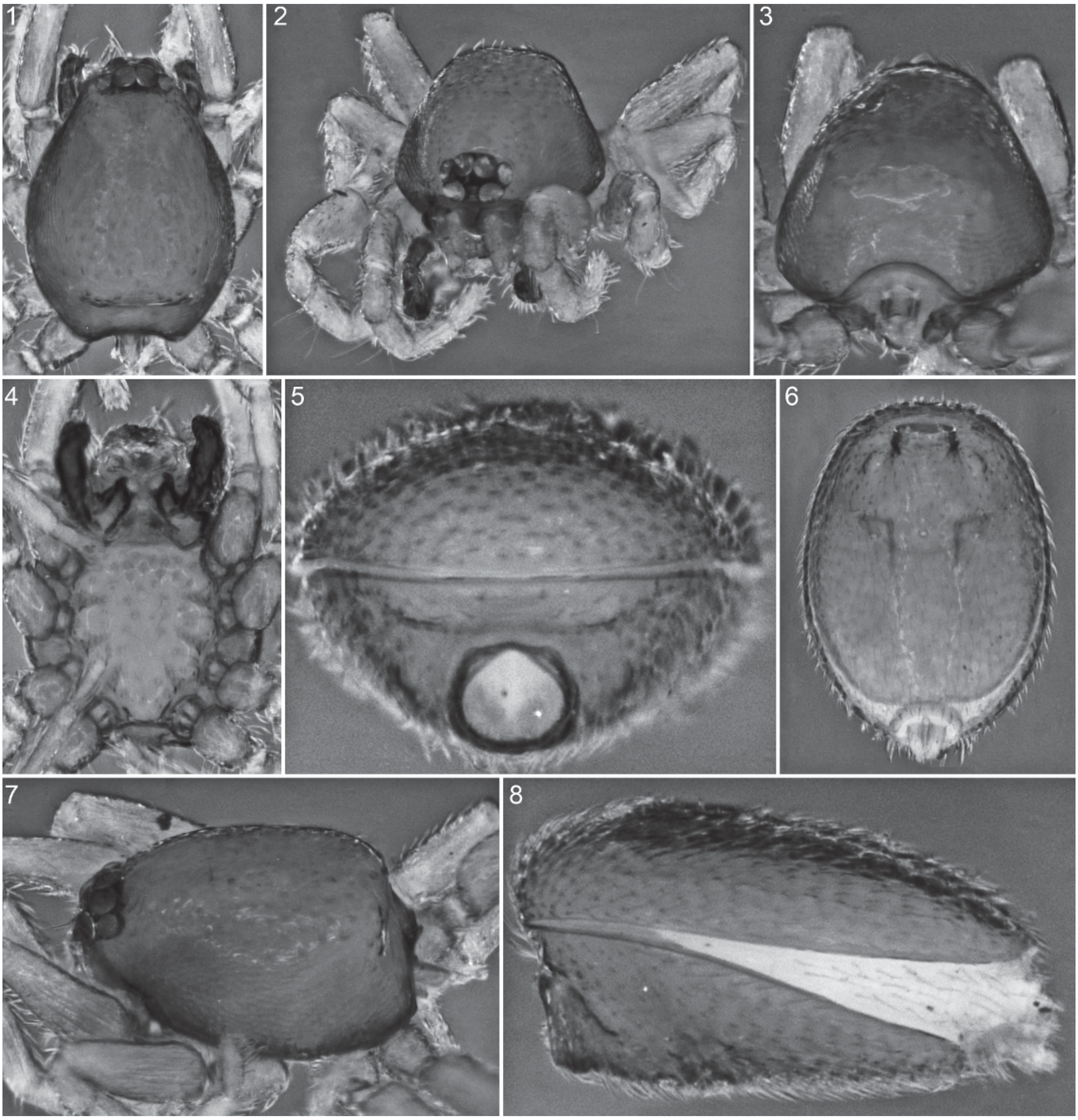
Pantropical Species

The most commonly encountered member of the genus, by far, is the pantropical species *B. parumpunctata*, which has been found from Florida south to Brazil, and from West Africa across southern Asia to many Pacific islands and northern Australia. Luckily, both sexes are easily distinguished from all their congeners.

Brignolia parumpunctata (Simon), new combination
Figures 1–94

Xestaspis parumpunctata Simon, 1893b: 305 (female holotype from Sierra Leone, no specific locality, in MNHN; examined).

Gamasomorpha perplexa Bryant, 1942: 325, figs. 11, 12, 18 (male holotype from St. Croix, Virgin



Figs. 1–8. *Brignolia parumpunctata* (Simon), male. **1.** Carapace, dorsal view. **2.** Same, anterior view. **3.** Same, posterior view. **4.** Cephalothorax, ventral view. **5.** Abdomen, anterior view. **6.** Same, ventral view. **7.** Carapace, lateral view. **8.** Abdomen, lateral view.

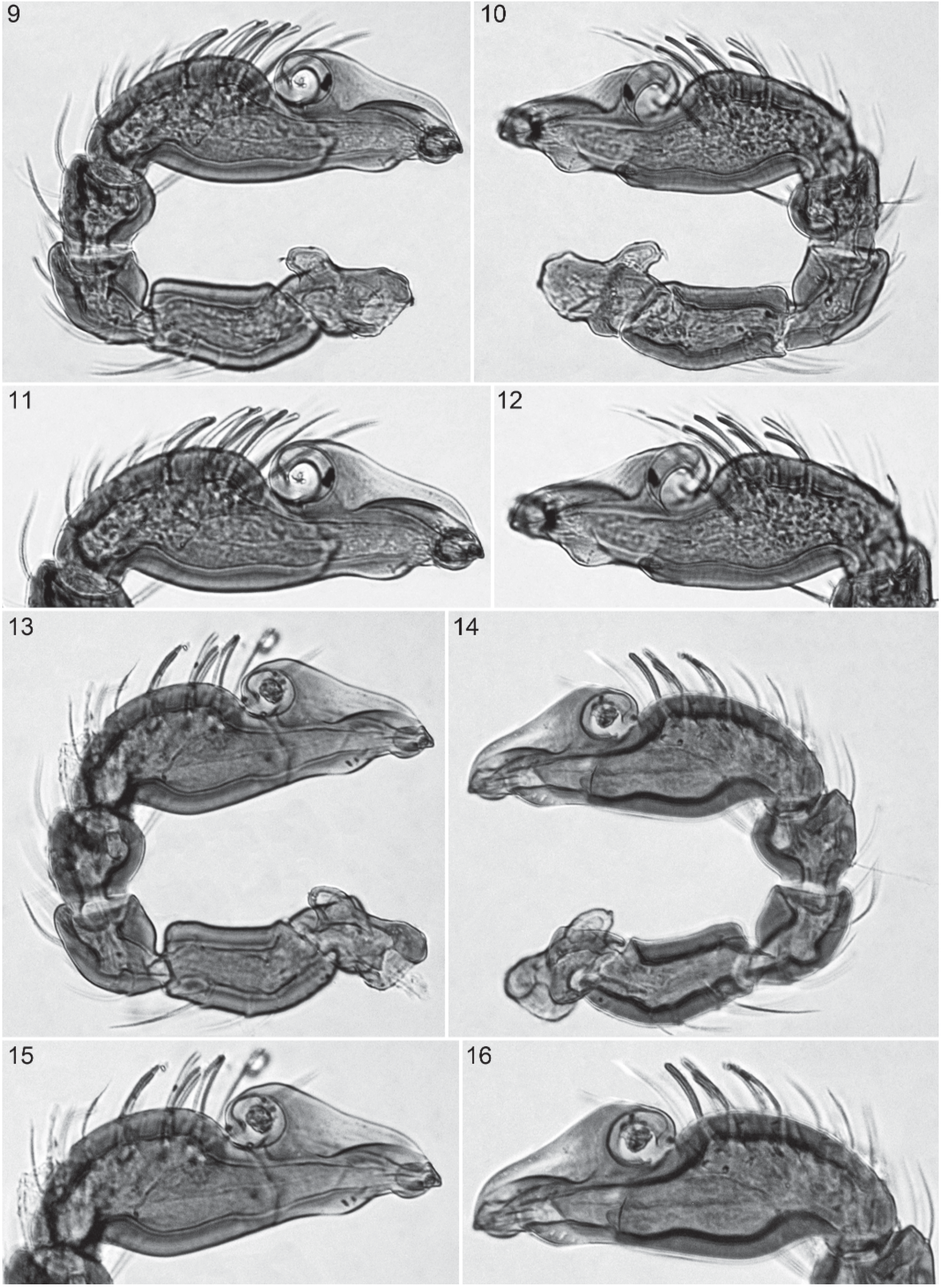
Islands, in MCZ; examined). NEW SYNONYMY.

Opopaea recondita Chickering, 1951: 231, figs. 18, 19 (female holotype from Canal Zone Biological Area [= Barro Colorado Island], Panamá, Panama, in MCZ; examined). – Burger, 2009: 343, figs. 11–16, 23C–G. NEW SYNONYMY.

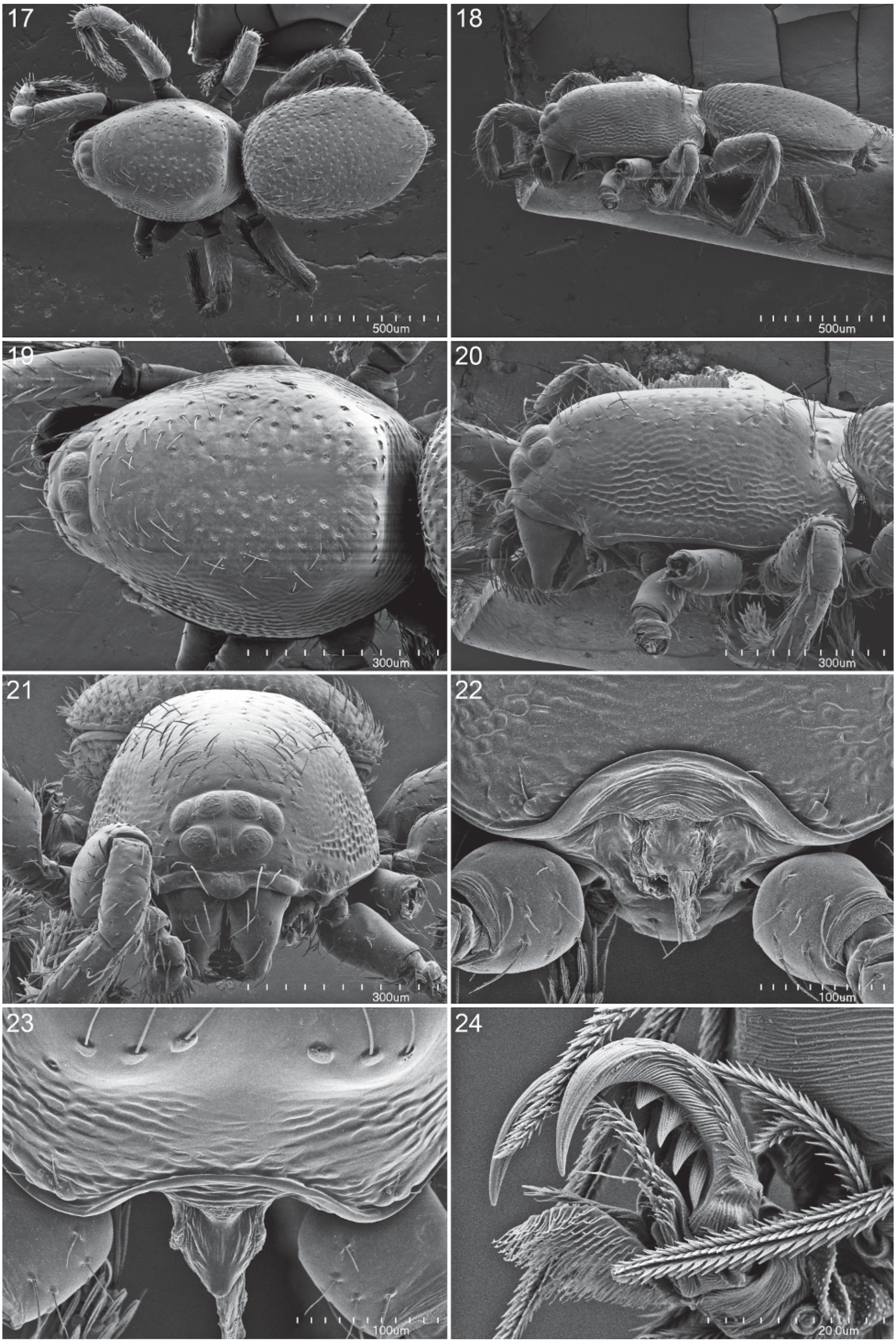
Brignolia cubana Dumitresco and Georgesco, 1983: 107, pl. 22, figs. 1–8 (male holotype from Estacíon Ecológica Siboney, Santiago de Cuba, Cuba, in Institut de Spéologie, Bucharest; not examined). – Saaristo, 2001: 343, figs. 139–141, 142A, 142B, 143, 144A, 144B, 145. – Saaristo and van Harten, 2006: 131, figs. 1, 2a, 2b, 3. NEW SYNONYMY.

Brignolia recondita: Platnick and Dupérré, 2009a: 4.

DIAGNOSIS: Males can easily be recognized by the ventrally directed protrusion situated



Figs. 9–16. *Brignolia parumpunctata* (Simon), male (top, specimen from Cuba, PBI_OON 27836; bottom, specimen from India, PBI_OON 12759). **9, 13.** Left palp, prolateral view. **10, 14.** Same, retrolateral view. **11, 15.** Left palpal bulb, prolateral view. **12, 16.** Same, retrolateral view.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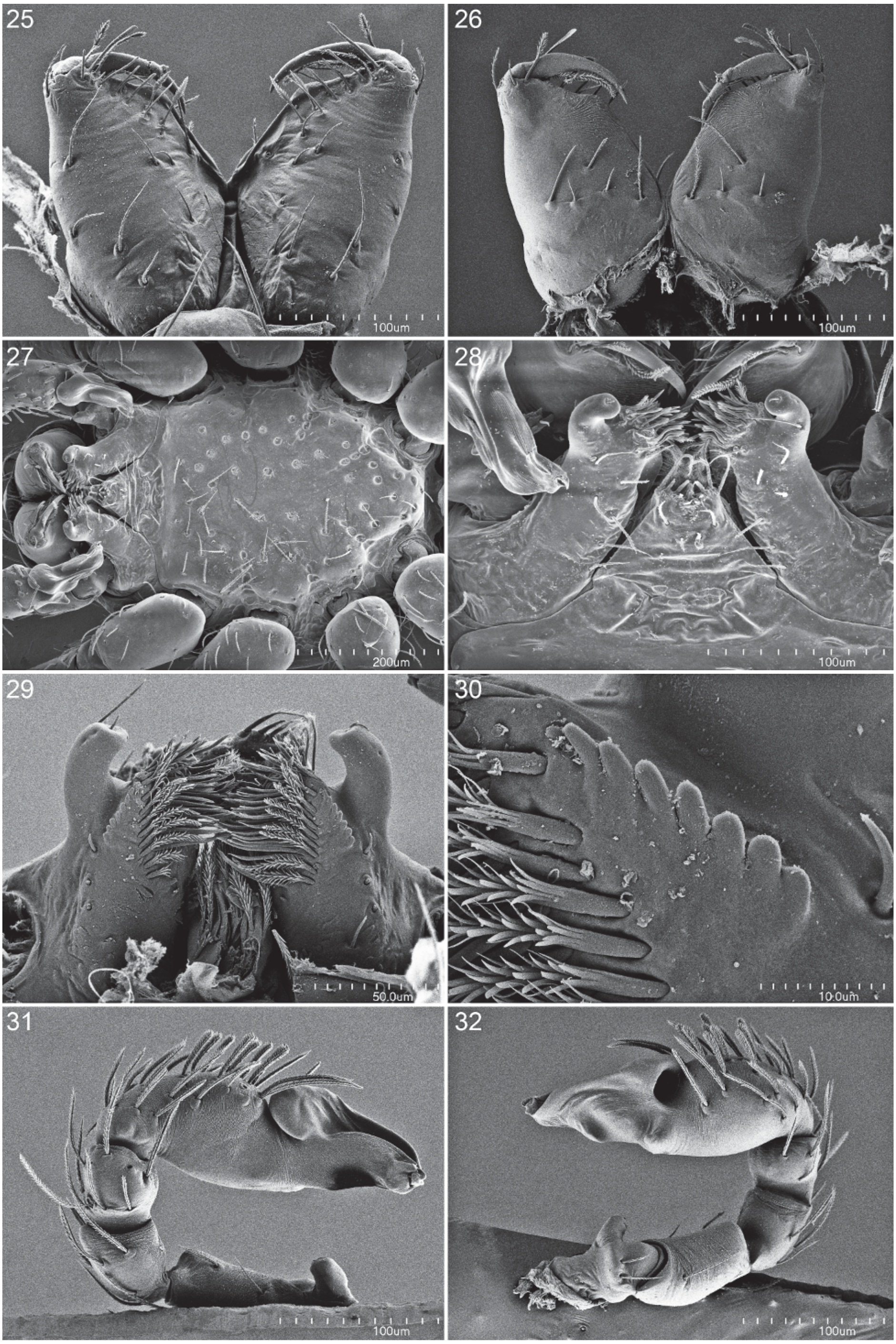
Figs. 17–24. *Brignolia parumpunctata* (Simon), male. **17.** Habitus, dorsal view. **18.** Same, lateral view. **19.** Carapace, dorsal view. **20.** Same, lateral view. **21.** Same, anterior view. **22.** Same, posterior view. **23.** Posterior margin of carapace, dorsal view. **24.** Claws of leg IV, oblique lateral view.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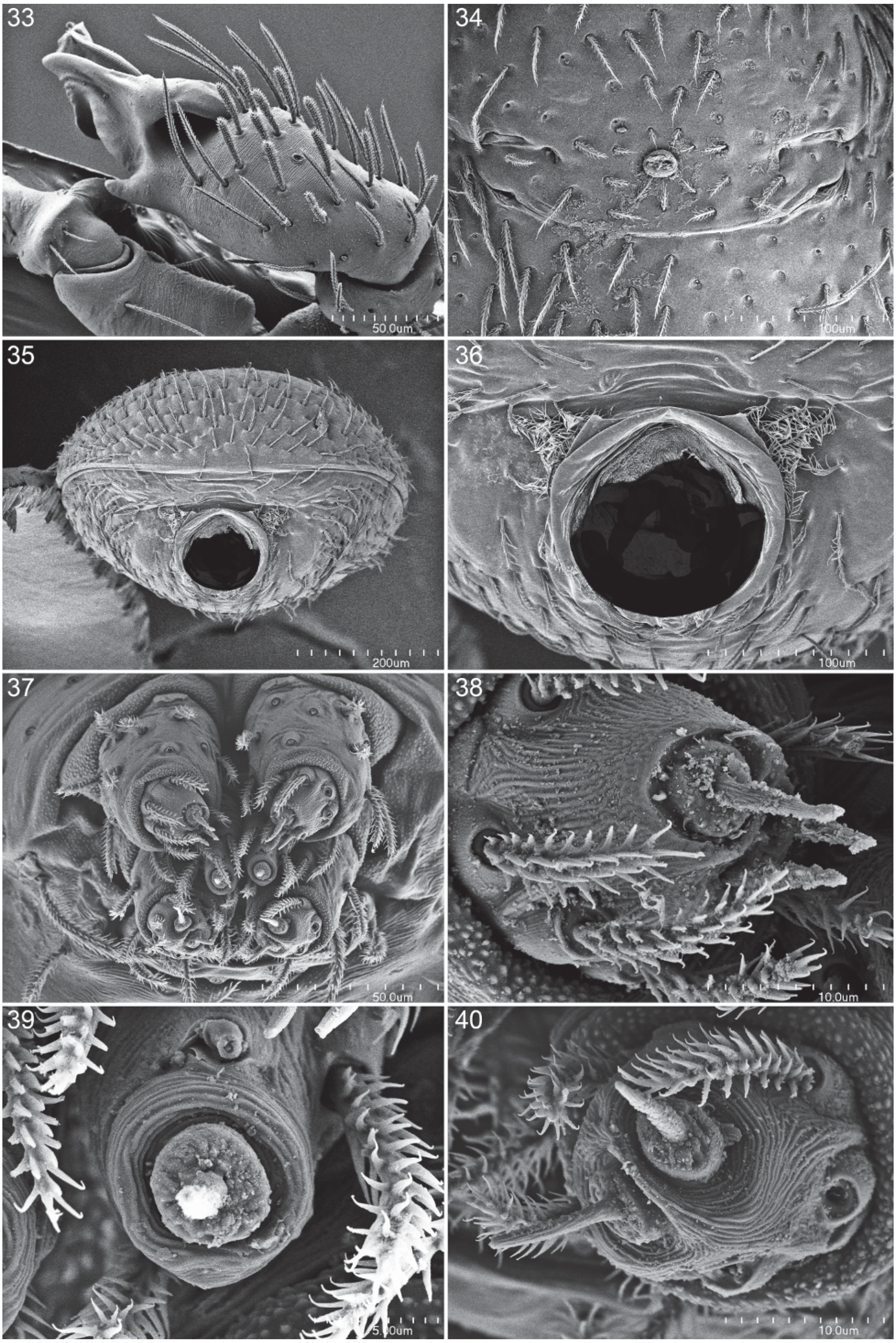
Figs. 25–32. *Brignolia parumpunctata* (Simon), male. **25.** Chelicerae, anterior view. **26.** Same, posterior view. **27.** Sternum and mouthparts, ventral view. **28.** Labium and endites, ventral view. **29.** Labrum and endites, dorsal view. **30.** Serrula, dorsal view. **31.** Left palp, prolateral view. **32.** Same, retrolateral view.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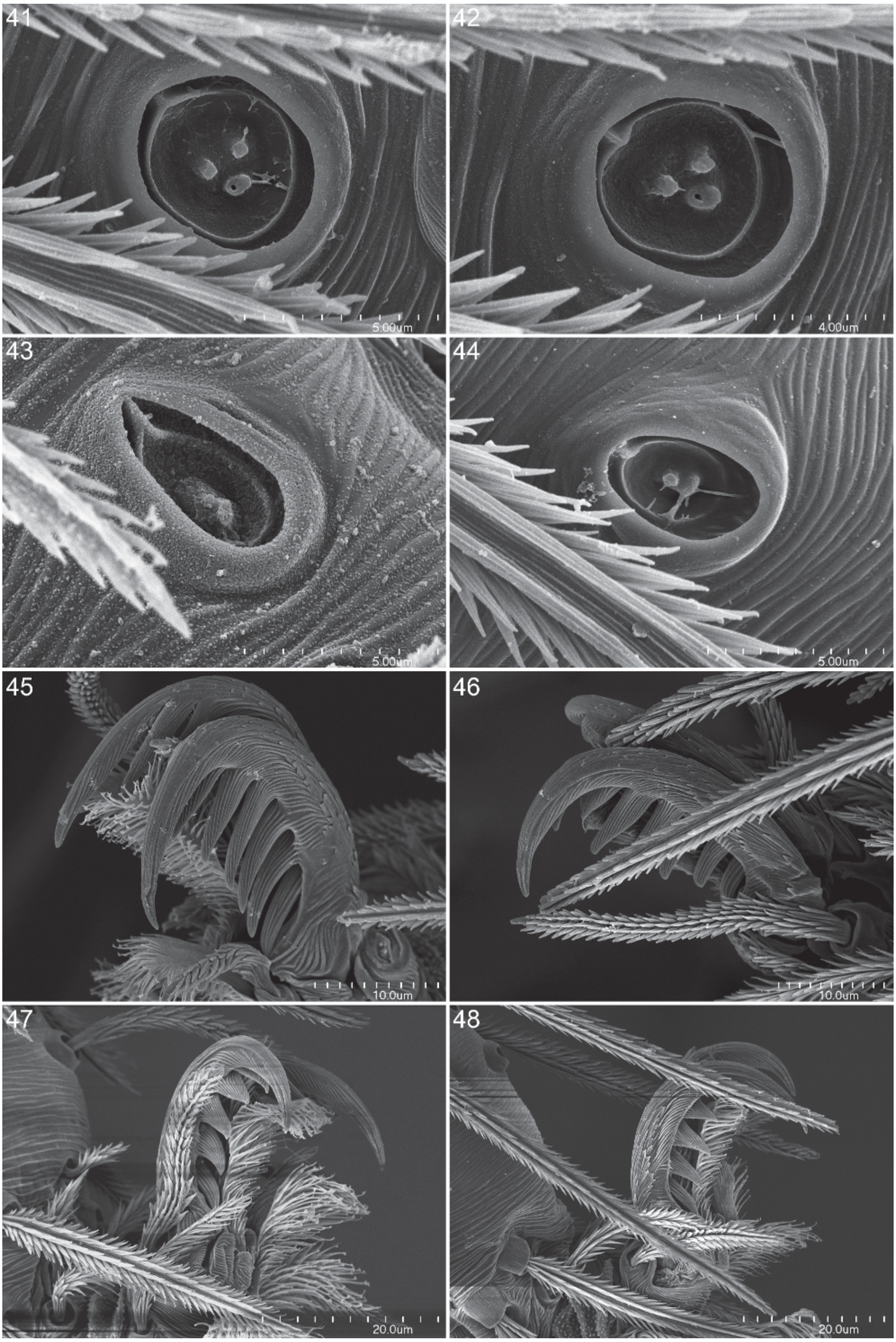
Figs. 33–40. *Brignolia parumpunctata* (Simon), male. **33.** Left palp, dorsal view. **34.** Epigastric region, ventral view. **35.** Abdomen, anterior view. **36.** Pedicel, anterior view. **37.** Spinnerets, apical view. **38.** Anterior lateral spinneret, apical view. **39.** Posterior median spinneret, apical view. **40.** Posterior lateral spinneret, apical view.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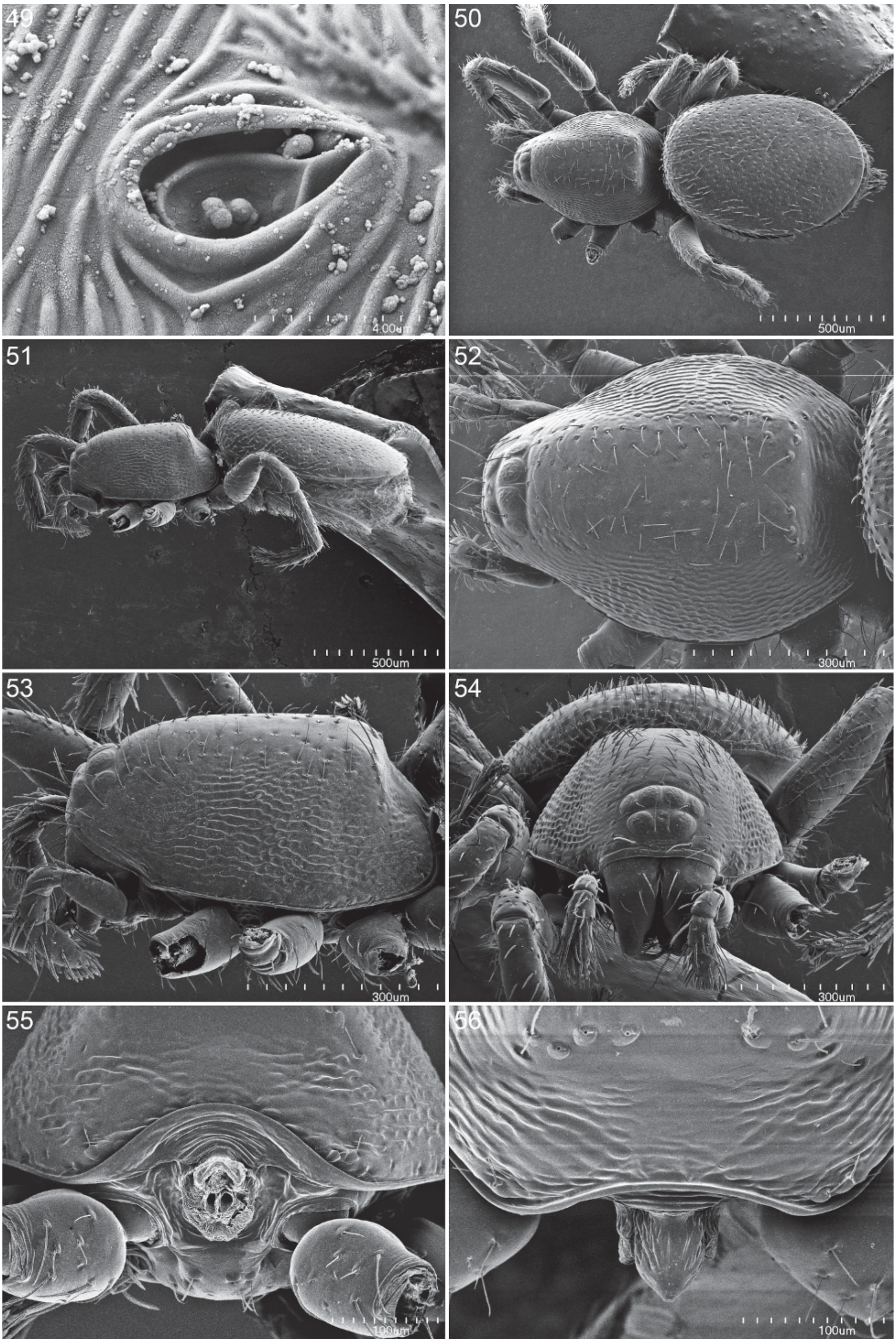
Figs. 41–48. *Brignolia parumpunctata* (Simon), male. **41.** Tarsal organ from leg I, dorsal view. **42.** Same, leg II. **43.** Same, leg III. **44.** Same, leg IV. **45.** Claws of leg I, lateral view. **46.** Same, leg II. **47.** Claws of leg III, oblique lateral view. **48.** Claws of leg IV, lateral view.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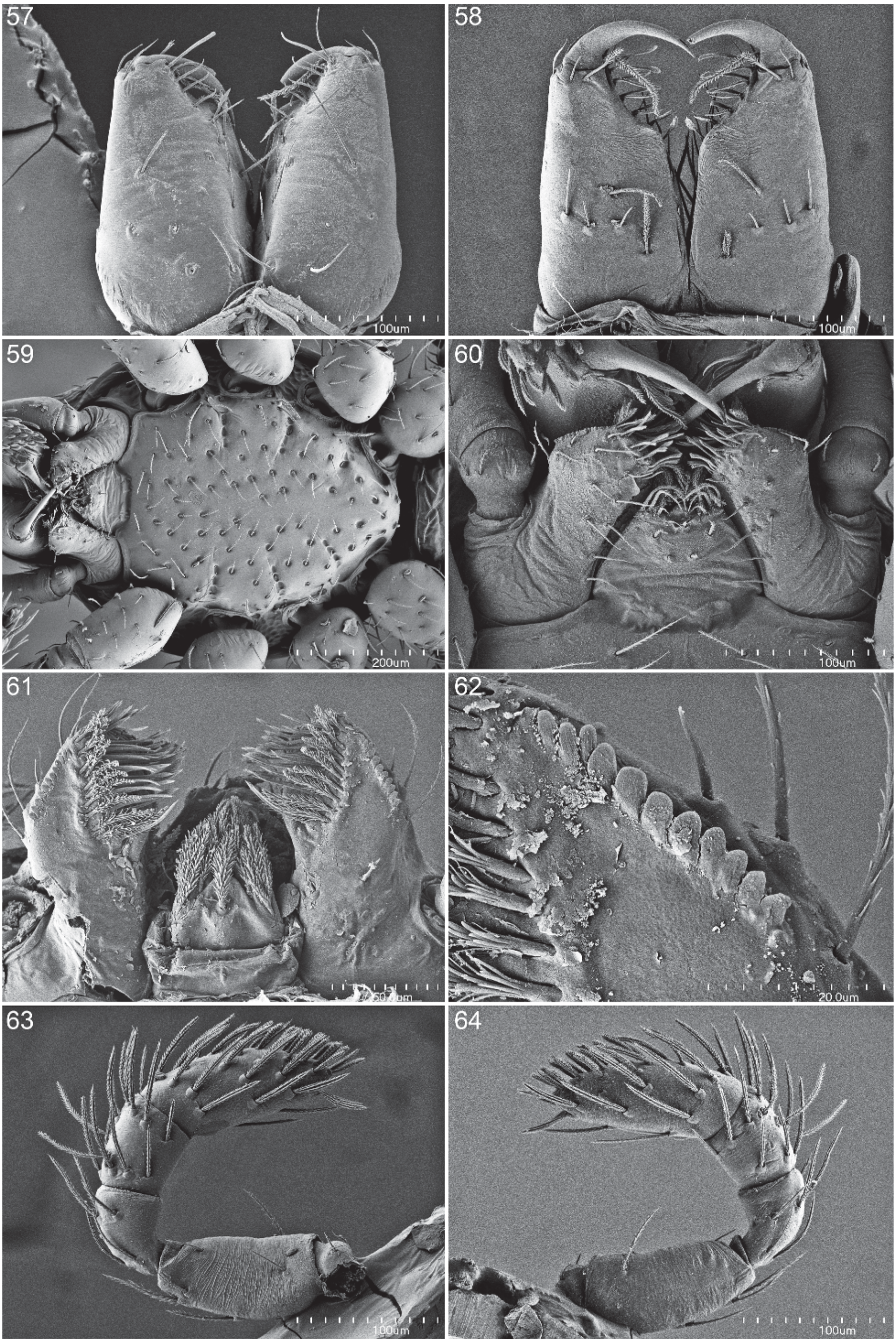
Figs. 49–56. *Brignolia parumpunctata* (Simon), male (fig. 49) and female (figs. 50–56). **49.** Tarsal organ from palp, dorsal view. **50.** Habitus, dorsal view. **51.** Same, lateral view. **52.** Carapace, dorsal view. **53.** Same, lateral view. **54.** Same, anterior view. **55.** Same, posterior view. **56.** Posterior margin of carapace, dorsal view.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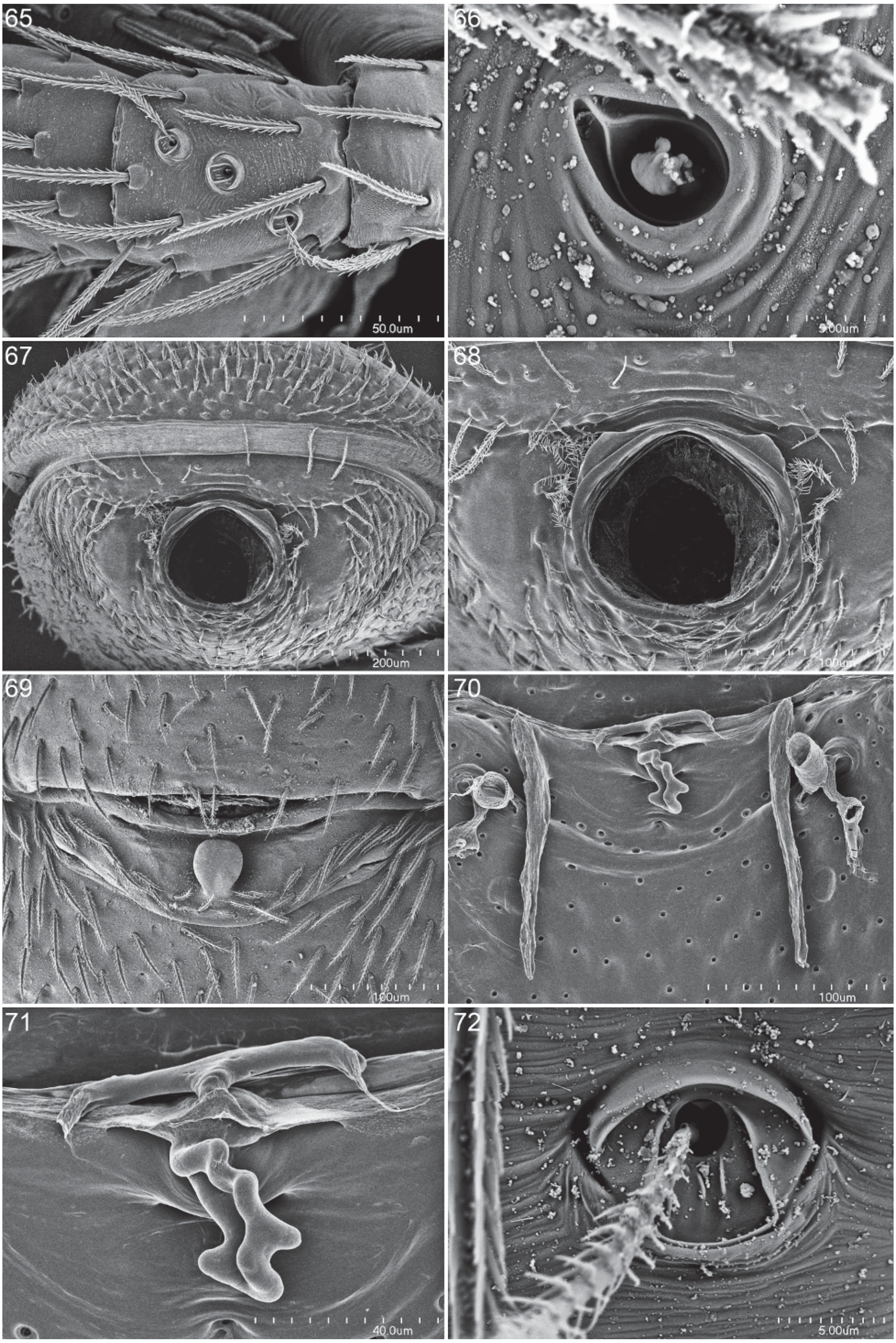
Figs. 57–64. *Brignolia parumpunctata* (Simon), female. **57.** Chelicerae, anterior view. **58.** Same, posterior view. **59.** Sternum and mouthparts, ventral view. **60.** Labium and endites, ventral view. **61.** Labrum and endites, dorsal view. **62.** Serrula, dorsal view. **63.** Left palp, prolateral view. **64.** Same, retrolateral view.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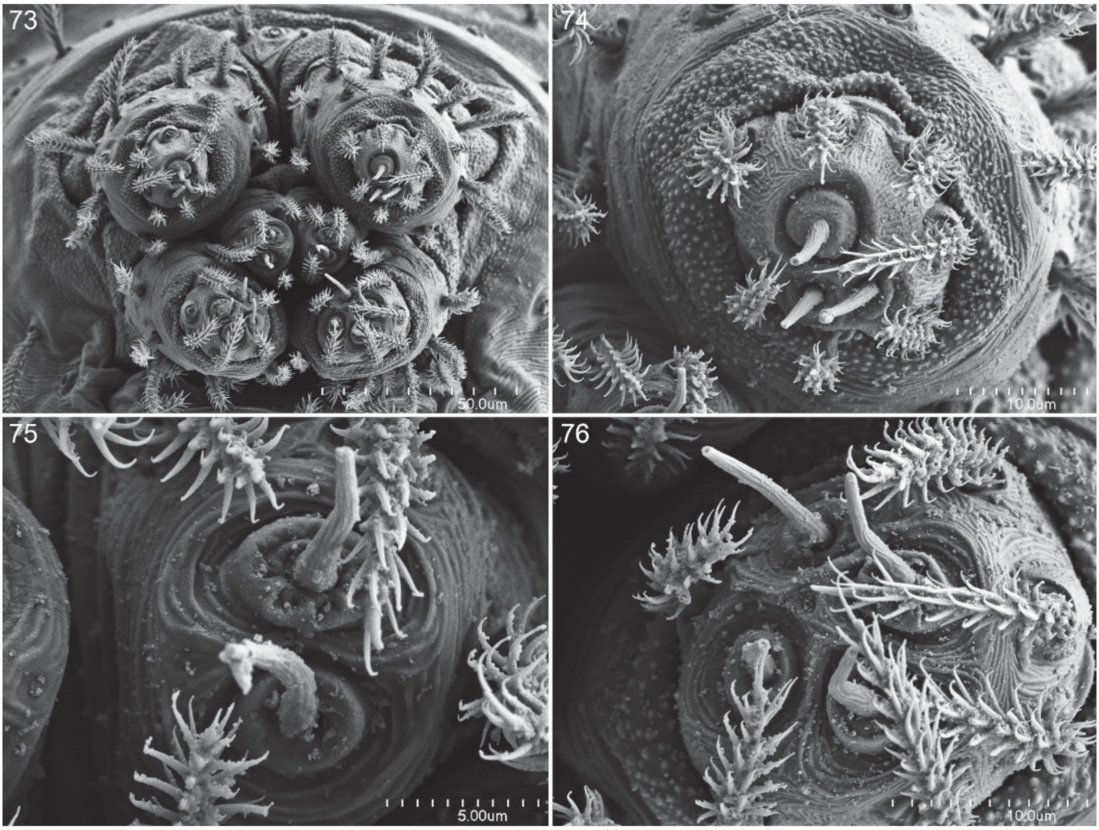
Figs. 65–72. *Brignolia parumpunctata* (Simon), female. **65.** Palpal tibia, dorsal view. **66.** Tarsl organ from palp, dorsal view. **67.** Abdomen, anterior view. **68.** Pedicel, anterior view. **69.** Epigastric region, ventral view. **70.** Internal genitalia, digested, dorsal view. **71.** Anterior process and posterior tube, dorsal view. **72.** Trichobothrial base from metatarsus IV, dorsal view.



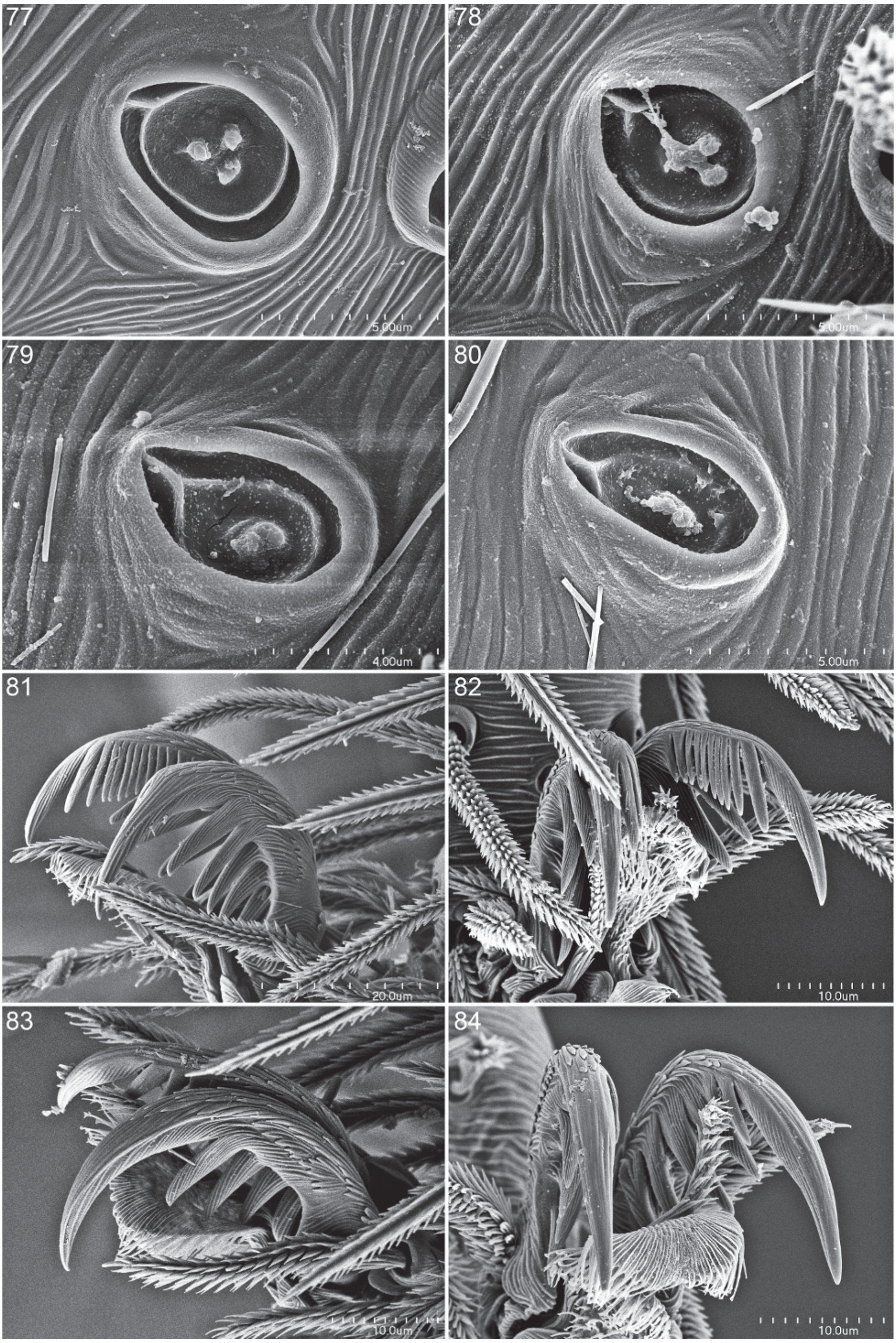
Figs. 73–76. *Brignolia parumpunctata* (Simon), female. **73.** Spinnerets, apical view. **74.** Anterior lateral spinneret, apical view. **75.** Posterior median spinneret, apical view. **76.** Posterior lateral spinneret, apical view.

medially on the clypeus (figs. 2, 21) and by the distinctively curled dorsal protrusion on the palpal bulb (figs. 9–16, 31, 32). Females can easily be recognized by the rounded, elevated protrusion situated between the epigastric furrow and the groove connecting the posterior spiracles (figs. 69, 93).

MALE (PBI_OON 515, figs. 1–49): Total length 1.17. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity without distinct shoulders, posterior margin rounded. Sternum covered with small round pits. Scutopedicel region with weakly W-shaped scutal ridge and very short, more dorsally situated secondary ridge, without distinct tubercles. Palpal bulb with rounded, distinctively curled dorsal protrusion.

FEMALE (PBI_OON 515, figs. 50–94): Total length 1.28. Postepigastric scutum with small, median, knoblike projection; internal wide, anterior T-shaped sclerite followed posteriorly by squiggled posterior tube.

MATERIAL EXAMINED: NORTH AMERICA: **United States:** *Florida:* Dade Co.: Chekika State Recreation Area, 50 km SW Miami, July 28, 1985, hammock forest litter (S., J. Peck, AMNH PBI_OON 1289), 1♂, 6♀; Old Cutler Hammock Park, S Miami, Dec. 10, 1986, hammock forest litter (Klimaszewski, Peck, AMNH PBI_OON 1273), 1♀. Lee Co.: Fort Myers, 26°38′N, 81°50′W, Mar. 18, 1954 (W. Ivie, AMNH PBI_OON 31180), 1♂, 6♀. Monroe Co.: N end, Big Torch Key, Nov. 7, 1984, hardwood hammock litter (S., J. Peck, AMNH PBI_OON 1088), 1♀; Botanical Garden, Stock Island,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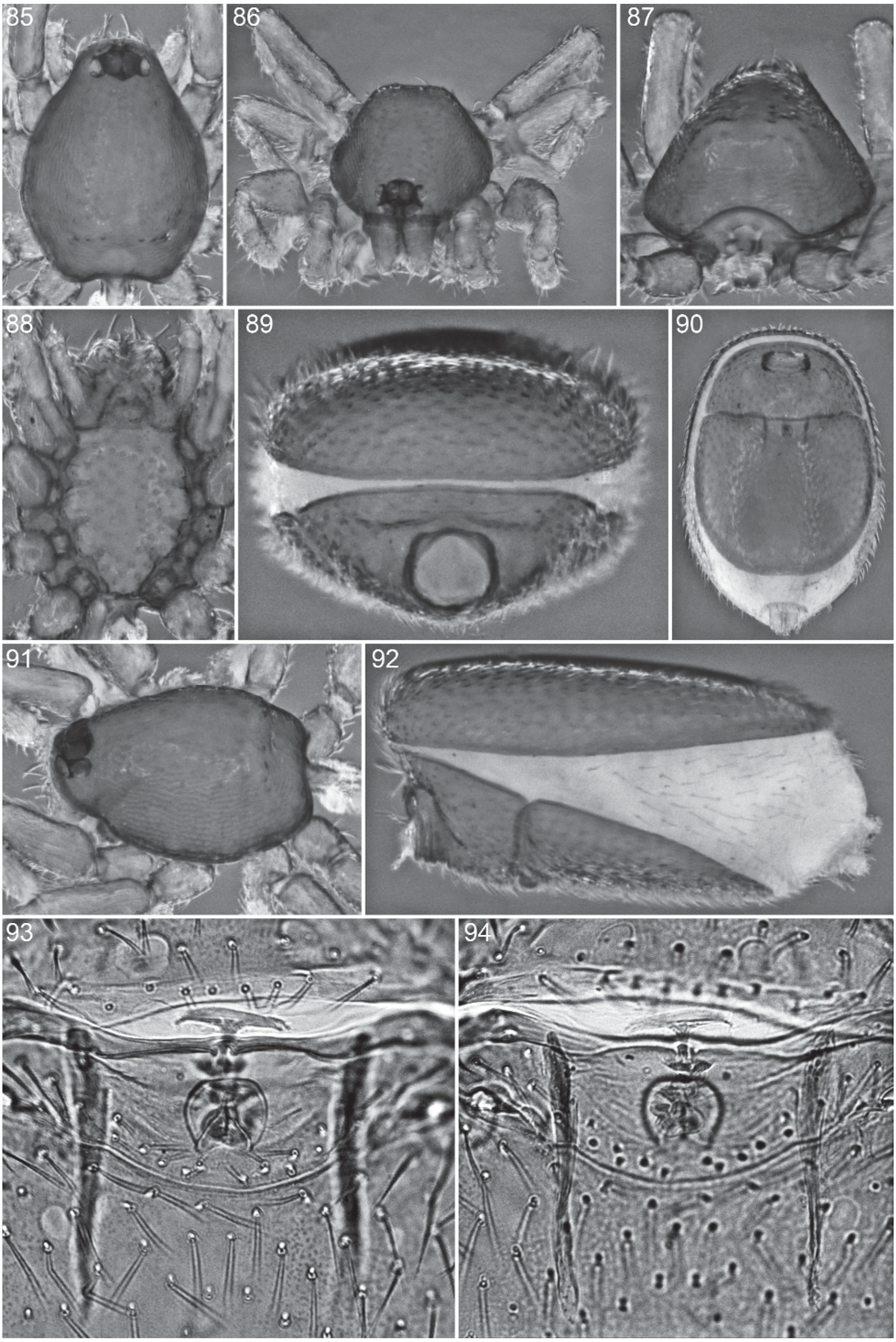
Figs. 77–84. *Brignolia parumpunctata* (Simon), female. **77.** Tarsal organ from leg I, dorsal view. **78.** Same, leg II. **79.** Same, leg III. **80.** Same, leg IV. **81.** Claws of leg I, lateral view. **82.** Claws of leg II, apical view. **83.** Claws of leg III, oblique lateral view. **84.** Claws of leg IV, distal view.



Figs. 85–94. *Brignolia parumpunctata* (Simon), female. **85.** Carapace, dorsal view. **86.** Same, anterior view. **87.** Same, posterior view. **88.** Cephalothorax, ventral view. **89.** Abdomen, anterior view. **90.** Same, ventral view. **91.** Carapace, lateral view. **92.** Abdomen, lateral view. **93.** Genitalia, ventral view. **94.** Same, dorsal view.

Nov. 19, 1985, hammock forest litter (S., J. Peck, AMNH PBI_OON 1297), 10♂, 11♀, Dec. 17, 1986, leaf litter (S. Peck, Klimaszewski, AMNH PBI_OON 1267), 2♂, 8♀; Islamorada, Upper Matacumbe Key, Aug. 8, 1971, Berlese, hardwood litter (S. Peck, FMNH PBI_OON 480), 3♂, 2♀, same (AMNH PBI_OON 1226), 26♂, 18♀, Aug. 30, 1986, forest deep soil wash (S., J. Peck, AMNH PBI_OON 1664), 1♀, same, hammock forest litter (S., J. Peck, AMNH PBI_OON 27489), 23♂, 21♀; Key Largo Key, 25°10′N, 80°20′W, Dec. 17, 1962 (W. Ivie, AMNH PBI_OON 1286), 1♂; Kitching's, Sugarloaf Key, Nov. 3, 1984, Berlese, hammock litter (S., J. Peck, AMNH PBI_OON 1324), 3♀; Marathon, Vaca Key, Aug. 31–Dec. 15, 1986, malaise, flight intercept trap, hammock (S., J. Peck, AMNH PBI_OON 1257), 1♂; No Name Key, Nov. 6, 1984, hardwood hammock leaf-log litter (S., J. Peck, AMNH PBI_OON 1283), 3♀; Pennekamp Reef State Park, Key Largo, Nov. 2, 1984, hardwood hammock leaf-log litter (S., J. Peck, AMNH PBI_OON 1269), 3♂, 3♀, July 31, 1985, Berlese, hammock forest leaf litter (S., J. Peck, AMNH PBI_OON 1086), 3♂, 4♀, Nov. 16, 1985–Feb. 24, 1986, hammock forest flight intercept trap trough (S., J. Peck, AMNH PBI_OON 1087), 1♀, Dec. 10, 1986, hardwood hammock forest litter (Klimaszewski, Peck, AMNH PBI_OON 1271), 4♀; Vaca Key, Marathon, Sept. 1, 1986, Berlese, hammock forest leaf litter (S., J. Peck, AMNH PBI_OON 1988), 3♀, Dec. 13, 1986, hammock litter (Klimaszewski, Peck, AMNH PBI_OON 1264), 1♂; Watsons Hammock, Big Pine Key, Aug. 1, 1985, hammock forest litter (S., J. Peck, AMNH PBI_OON 1311), 1♂; Windley Key, Nov. 18, 1985, hammock forest litter (S., J. Peck, AMNH PBI_OON 1279), 4♂, 13♀. **Mexico:** *Nayarit:* Mantauche Beach, San Blas, Sept. 9, 1966 (J., W. Ivie, AMNH PBI_OON 1408), 3♂; San Blas, 21°32′N, 105°18′W, May 14, 1963 (W. Gertsch, W. Ivie, AMNH PBI_OON 483), 1♂. *Quintana Roo:* Cozumel, July 14, 1951 (L. Stannard, AMNH PBI_OON 482), 1♀. *San Luis Potosí:* Covadonga, WSW Valles, Aug. 16, 1964 (J., W. Ivie, AMNH PBI_OON 1349), 1♀; Quinta Chilla, Tamazunchale, Dec. 20, 1948 (H. Leech, CAS 38460, PBI_OON 35307), 1♂; Tamazunchale, 21°15′N, 98°47′W, Aug. 17, 1964 (J., W. Ivie, AMNH PBI_OON 1367), 1♂, 2♀; 1 mi SW Tamazunchale, 21°15′N, 98°49′W, July 25, 1966 (J., W. Ivie, AMNH PBI_OON 1399, 1681), 3♂, 1♀; 20 mi S Valles, Apr. 14, 1946 (A., L. Davis, AMNH PBI_OON 1389), 2♂, 5♀. *Tabasco:* Villa Hermosa, La Venta, Aug. 13, 1966 (J., W. Ivie, AMNH PBI_OON 1418), 3♂, 1♀. *Tamaulipas:* Mante, 22°45′N, 98°58′W, Apr. 17, 1963 (W. Gertsch, W. Ivie, AMNH PBI_OON 1276), 1♀. *Veracruz:* W side Coatzocoalcos, 18°09′N, 94°26′W, Aug. 11, 1966 (J., W. Ivie, AMNH PBI_OON 1400), 1♂; 7 mi W Coatzocoalcos, 18°08′N, 94°30′W, Aug. 31, 1964 (J., W. Ivie, AMNH PBI_OON 1371, 1398), 4♂, 2♀; 10 mi W Coatzocoalcos, 18°08′N, 94°32′W, Aug. 15, 1966 (J., W. Ivie, AMNH PBI_OON 1364), 1♂; Pico de Oro, 17°58′N, 93°30′W, Aug. 12, 1966 (J., W. Ivie, AMNH PBI_OON 1417), 4♂, 5♀; 9 mi SSW Veracruz, 19°02′N, 96°12′W, Aug. 7, 1966 (J., W. Ivie, AMNH PBI_OON 1402), 2♂, 3♀. *Yucután:* Chichén Itzá, June 27, 1951 (L. Stannard, AMNH PBI_OON 1416), 2♂, 6♀. CENTRAL AMERICA: **Guatemala:** *Escuintla:* 6 km NE Puerto San José, 13°57′28.0″N, 90°45′47.2″W, July 4, 2006, leaf litter sifting, secondary forest around farm, elev. 5 m (J. Huff, C. Víquez, D. Ortiz, C. Avila, AMNH PBI_OON 490), 2♀. **Costa Rica:** *Alajuela:* San Carlos, El Tanque, 10°49.522′N, 84°58.535′W, May 15, 2008, Berlese, riparian forest (C. Víquez, AMNH PBI_OON 37524), 2♀. *Guanacaste:* Bosque San Emilio, Parque Nacional Santa Rosa, May 19, 2007, Berlese, leaf and log litter (J. Louderman, C. Grinter, FMNH 34865, PBI_OON 10582), 1♀. **Panama:** *Colón:* Gamboa, July 24, 1954 (A. Chickering, MCZ 72185, PBI_OON 27213), 4♂, 2♀, Jan. 27, 1958 (A. Chickering, MCZ 72196, PBI_OON 27194), 1♂, 1♀, Jan. 28, 1958 (A. Chickering, MCZ 72207, PBI_OON 27206), 42♂, 76♀, Mar. 7, 1958 (A. Chickering, MCZ 72213, PBI_OON 27201), 1♂, 2♀; Gatún, Jan. 30, 1958 (A. Chickering, MCZ 72201, PBI_OON 27211), 2♂, 3♀, Feb. 1958 (A. Chickering, MCZ 72181, PBI_OON 27192), 47♂, 128♀, Feb. 15, 1958 (A. Chickering, MCZ 66790, PBI_OON 27009), 1♂, 1♀, Feb. 27, 1958 (A. Chickering, MCZ

72182, PBI_OON 27204), 1♂, Mar. 6, 1958 (A. Chickering, MCZ 72183, 72210, PBI_OON 27189, 27195), 14♂, 49♀. *Panamá:* Balboa, May 1964 (A. Chickering, MCZ 72194, PBI_OON 27199), 34♂, 114♀; Barro Colorado Island, Apr. 22, 1939 (V. Dropkin, AMNH PBI_OON 1233), 1♀, July 1943–Mar. 1944, Berlese (J. Zetek, MCZ PBI_OON 491) 1♀ (holotype), Aug. 1950 (A. Chickering, MCZ 72200, 72252, PBI_OON 26402, 27203), 24♂, 62♀, Nov. 1952–Mar. 1953, Berlese (J. Zetek, AMNH PBI_OON 1234), 1♀, July 1954 (A. Chickering, MCZ 68332, 72253, PBI_OON 26408, 26412), 10♂, 24♀, Aug. 1954 (A. Chickering, MCZ 68334, 68337, PBI_OON 26409, 26411), 29♂, 56♀, Aug. 14–22, 1954 (A. Chickering, MCZ 72254, PBI_OON 26401), 1♀, Dec. 21, 1957 (A. Chickering, MCZ 68333, PBI_OON 26413), 2♂, 9♀, Jan. 14–18, 1958 (A. Chickering, MCZ 68331, PBI_OON 26407), 29♂, 23♀, Feb. 6, 1958 (A. Chickering, MCZ 72249, PBI_OON 26404), 1♀, Feb. 8–Mar. 3, 1958 (A. Chickering, MCZ 72250, PBI_OON 26410), 3♀, Feb. 20, 1958 (A. Chickering, MCZ 68336, PBI_OON 26403), 1♀, Mar. 1958 (A. Chickering, MCZ 72251, PBI_OON 26405), 9♂, 13♀, Mar. 1, 1958 (A. Chickering, MCZ 68335, PBI_OON 26406), 1♂, Jan. 22, 1959, Berlese, compost (H. Dybas, FMNH PBI_OON 484), 1♀; Corozal, July 10, 1954, weeds, hay (A. Chickering, MCZ 72198, PBI_OON 27198), 2♀, Dec. 23, 1957 (A. Chickering, MCZ 72190, PBI_OON 27184), 1♂, 6♀, Jan. 4, 1958 (A. Chickering, MCZ 72202, PBI_OON 27209), 2♀, May 1964 (A. Chickering, MCZ 72448, PBI_OON 26414), 42♂, 102♀, May 10, 1964 (A. Chickering, MCZ 72184, PBI_OON 27187), 4♂, 6♀; Diablo, Dec. 19, 1957 (A. Chickering, MCZ 72186, PBI_OON 27215), 3♀; Forest Preserve, Aug. 1939 (A. Chickering, MCZ 72558, PBI_OON 26869), 1♀, Dec. 24, 1957 (A. Chickering, MCZ 72188, PBI_OON 27212), 1♂, Jan. 29, 1958 (A. Chickering, MCZ 72187, PBI_OON 27214), 1♂; Madden Dam, Feb. 12, 1958 (A. Chickering, MCZ 72189, PBI_OON 27207), 1♀; Miraflores, Jan. 3, 1958 (A. Chickering, MCZ 72193, PBI_OON 27188), 1♂, 1♀; Pedro Miguel, Aug. 25, 1954 (A. Chickering, MCZ PBI_OON 27208), 13♂, 29♀, Dec. 1957 (A. Chickering, MCZ 72191,PBI_OON 27210), 4♂, 19♀, Jan. 23, 1958 (A. Chickering, MCZ 72197, PBI_OON 27185), 4♂, Feb. 11, 1958 (A. Chickering, MCZ 72204, PBI_OON 27197), 1♀, Mar. 7, 1958 (A. Chickering, MCZ 72208, PBI_OON 27191), 1♂, 1♀; 3 mi N Pedro Miguel, Aug. 23, 1954 (A. Chickering, MCZ 72195, 72209, PBI_OON 27200, 27202), 20♂, 47♀; 4 mi beyond Pedro Miguel, Aug. 26, 1954 (A. Chickering, MCZ 72212, PBI_OON 27190), 13♂, 17♀; Playa Corona, Aug. 8, 1983, litter (J., F. Murphy, AMNH PBI_OON 36541), 2♂; Summit, July 21–29, 1950 (A. Chickering, MCZ 72206, PBI_OON 27186), 1♀, Aug. 23–28, 1950 (A. Chickering, MCZ 72211, PBI_OON 27205), 9♂, 17♀, Aug. 17, 1954 (A. Chickering, MCZ 72199, PBI_OON 27183), 8♂, 10♀; Summit Garden Nature Park, July 1954 (A. Chickering, MCZ 72205, PBI_OON 27193), 19♂, 67♀, Dec. 1957 (A. Chickering, MCZ 72203, PBI_OON 27196), 5♂, 19♀. WEST INDIES: **Cuba:** *Santiago de Cuba:* Estacíon Ecológica Siboney, Municipio Santiago de Cuba, 19°57′39″N, 75°42′52″W, May 5, 2010, dry litter (N. Platnick, A. Sánchez, A. Pérez, G. Alayón, BSC PBI_OON 518), 1♂. **Jamaica:** *Clarendon:* Salt River, Nov. 24, 1963 (A. Chickering, MCZ 72137, PBI_OON 27226), 6♂, 18♀. *Kingston:* Buccaneer Beach, Dec. 8, 1963 (A. Chickering, MCZ 72135, PBI_OON 27234), 2♀; Kingston, Aug. 27–29, 1934 (P. Darlington, MCZ 68223, PBI_OON 27027), 1♀, July 21, 1958 (M. Sanderson, MCZ 72147, PBI_OON 27002), 1♂, 3♀; Kingston, Institute Gardens, Nov. 7, 1949 (Bengry, MCZ 66693, PBI_OON 27021), 36♂, 46♀; Kingston, Museum Zoo, Sept. 30, 1957, debris (A. Chickering, MCZ 72174, PBI_OON 27301), 3♀; Mona Road, Oct. 19, 1957 (A. Chickering, MCZ 72139, PBI_OON 27231), 1♂; Palisadoes, Nov. 1, 1957 (A. Chickering, MCZ 72169, PBI_OON 27313), 3♀. *St. Andrew:* near August Town, May 29, 1956 (C. Hoff, MCZ 72151, PBI_OON 26988), 1♀; Fairway and Seymour Avenues, Nov. 7, 1963 (A. Chickering, MCZ 72103, PBI_OON 27332), 1♂, 8♀; Ferry, Oct. 28, 1957 (A. Chickering, MCZ 71911, PBI_OON 27014), 2♀; Ferry, 9–10 miles W Red Hills Road, Sept. 27, 1957 (A. Chickering, MCZ 72141, PBI_OON 27328), 3♂, 1♀;

Hope Gardens, Oct. 23, 1957 (A. Chickering, MCZ 72158, PBI_OON 26998), 3♂, 10♀, Nov. 2, 1957 (A. Chickering, MCZ 72106, 72167, PBI_OON 27220, 27325), 7♂, 29♀, Nov. 26, 1963 (A. Chickering, MCZ 72129, PBI_OON 27219), 7♂, 61♀, Nov. 27, 1963 (A. Chickering, MCZ 72108, 72292, 72163, PBI_OON 27347, 27316, 27299), 10♂, 27♀, Dec. 1963 (A. Chickering, MCZ 72111, PBI_OON 27235), 34♂, 63♀, Dec. 1, 1963 (A. Chickering, MCZ 72160, PBI_OON 26999), 9♂, 29♀, Dec. 6, 1963 (A. Chickering, MCZ 72110, PBI_OON 27236), 5♂, 29♀, Dec. 14, 1963 (A. Chickering, MCZ 72293, PBI_OON 27308), 1♂, 2♀, Dec. 19, 1963 (A. Chickering, MCZ 72172, PBI_OON 27322), 10♂, 64♀, Dec. 21, 1963 (A. Chickering, MCZ 72128, 72171, 72107, PBI_OON 27311, 27326, 27348), 3♂, 12♀, Dec. 25, 1963 (A. Chickering, MCZ 72136, PBI_OON 27223), 15♂, 56♀; 2 miles W Kingston, May 24, 1956 (A. Chickering, MCZ 72146, PBI_OON 26993), 2♀; Liguanea, Oct. 1957 (A. Chickering, MCZ 72031, PBI_OON 26680), 2♀, Oct. 8, 1957 (A. Chickering, MCZ 72145, PBI_OON 27001), 2♂, 2♀; Liguanea, Bamboo Ave., Nov. 4, 1957 (A. Chickering, MCZ 72140, PBI_OON 27305), 1♀, Nov. 14, 1957, hay debris (A. Chickering, MCZ 72156, PBI_OON 27003), 9♀, Nov. 14, 1957, (A. Chickering, MCZ 66689, PBI_OON 27015), 1♂; Liguanea, Fairway Ave., Nov. 8, 1963 (A. Chickering, PBI_OON 27314), 1♂, 7♀, Nov. 18, 1963 (A. Chickering, MCZ 72114, PBI_OON 27218), 8♂, 39♀, Nov. 25, 1963 (A. Chickering, MCZ 72108, PBI_OON 27228), 13♂, 51♀, Dec. 24, 1963 (A. Chickering, MCZ 72165, PBI_OON 27303), 3♂, 15♀; Liguanea, Hermitage Road, Nov. 28, 1963 (A. Chickering, MCZ 72290, 72112, PBI_OON 27317, 27335), 3♂, 18♀; Liguanea, Hope Road, Dec. 12, 1963 (A. Chickering, MCZ 72096, PBI_OON 27329), 15♂, 18♀, Dec. 21, 1963 (A. Chickering, MCZ 72170, PBI_OON 27309), 1♂, 2♀; Liguanea, Mona Road, Oct. 31, 1957 (A. Chickering, MCZ 72131, PBI_OON 27239), 18♂, 21♀, Nov. 14, 1963 (A. Chickering, MCZ 72176, PBI_OON 27298), 16♂, 29♀, Nov. 15, 1963 (A. Chickering, MCZ 72177, PBI_OON 27312), 7♀, Nov. 20, 1963 (A. Chickering, MCZ 72122, PBI_OON 27217), 14♂, 31♀, Dec. 21, 1963 (A. Chickering, MCZ 72119, 72180, PBI_OON 27327, 26766), 16♂, 60♀; Liguanea, Monroe Road, Oct. 15, 1957 (A. Chickering, MCZ 72178, PBI_OON 27331, AMNH PBI_OON 1245), 18♂, 45♀, Oct. 19, 1957 (A. Chickering, MCZ 72148, 72162, PBI_OON 27318, 27000), 5♂, 25♀; Liguanea, Old Hope Road, Dec. 3, 1963 (A. Chickering, MCZ 72214, PBI_OON 27300), 20♂, 33♀; Long Mountain, NE slope, May 5, 1956 (C. Hoff, MCZ 72098, PBI_OON 27340), 1♀; Mona, Oct. 1, 1957 (A. Chickering, MCZ 72104, PBI_OON 27307), 1♂, near hotel, Oct. 3, 1957 (A. Chickering, MCZ 72100, PBI_OON 27232), 2♀, Oct. 5, 1957, (A. Chickering, MCZ 72143, PBI_OON 27341), 2♂, 13♀, Oct. 7, 1957, (A. Chickering, MCZ 66691, PBI_OON 27010), 2♂, 26♀, Oct. 11, 1957, citrus orchard (A. Chickering, MCZ 72117, PBI_OON 27221), 2♂, 18♀, Oct. 26, 1957 (A. Chickering, MCZ 72166, PBI_OON 27302), 1♂, 6♀; Mona, Buttercup Drive Road, Dec. 1, 1963 (A. Chickering, MCZ 72099, 72116, PBI_OON, 27345, 27343), 5♂, 13♀; Mona Heights, Nov. 29, 1963 (A. Chickering, MCZ 72118, PBI_OON 27334), 14♂, 41♀, Dec. 15, 1963 (A. Chickering, MCZ 72152, 72161, PBI_OON 26991, 27004), 9♂, 40♀, Dec. 22, 1963 (A. Chickering, MCZ 72125, 72215, 72123, PBI_OON 27233, 27323, 27230), 46♂, 78♀, Dec. 26, 1963 (A. Chickering, MCZ 72115, PBI_OON 27339), 44♂, 241♀, Dec. 28, 1963 (A. Chickering, MCZ 72155, PBI_OON 26987), 1♀, Dec. 29, 1963 (A. Chickering, MCZ 72097, PBI_OON 27336), 15♂, 77♀; Mona Heights, Hope Road, Dec. 13, 1963 (A. Chickering, MCZ 72121, PBI_OON, 27342), 66♂, 87♀; Mona Road, Dec. 7, 1953 (A. Chickering, MCZ 72173, PBI_OON 27304), 26♂, 93♀, Oct. 22, 1957 (A. Chickering, MCZ 72144, PBI_OON 26997), 2♂, 1♀, Nov. 13, 1963 (A. Chickering, MCZ 72113, PBI_OON 27330), 31♂, 10♀, Nov. 14, 1963 (A. Chickering, MCZ 72101, 72109, 72535, PBI_OON 27344, 27346), 1♂, 2♀, Nov. 15, 1963 (A. Chickering, MCZ 72127, PBI_OON 27337, 26933), 22♂, 34♀, Dec. 7, 1963 (A. Chickering, MCZ 72130, PBI_OON 27229), 1♂; Newcastle, Nov. 12, 1963 (A. Chickering, MCZ 72538, PBI_OON 26932), 1♀; Richards Reservoir, Oct. 18, 1957 (A. Chickering, MCZ 72294, PBI_OON 27319), 1♀, Nov. 9, 1957 (A. Chickering, MCZ 72105, PBI_OON 27338), 5♀, Nov. 18, 1957 (A. Chickering, MCZ 72153, PBI_OON 26994), 4♂, 16♀, Nov. 27, 1957, bushes, vines and hay (A. Chickering, MCZ 72142, PBI_OON 27333), 8♂, 12♀, Dec. 3, 1957 (A. Chickering, MCZ 72149, PBI_OON 26996), 2♂, 18♀, Nov. 23, 1963 (A. Chickering, MCZ 72132, 72168, PBI_OON 27237, 27321), 25♂, 40♀, Dec. 18, 1963 (A. Chickering, MCZ 72124, 72291, PBI_OON 27216, 27320), 23♂, 21♀; Reservoir Aqueduct, Nov. 30, 1963 (A. Chickering, MCZ 72126, 72179, PBI_OON 27224, 27306), 18♂, 31♀; Trafalgar Road, Nov. 19–21, 1963 (A. Chickering, MCZ 72175, PBI_OON 27310), 5♂, 14♀; Washington Road, Dec. 15, 1963 (A. Chickering, MCZ 72120, PBI_OON 27227), 1♀. *St. Ann:* Discovery Bay, Mar. 20–21, 1955 (A. Nadler, AMNH PBI_OON 1243), 1♀; Rum Cove, dead leaves and humus in thicket,Jan. 30, 1955 (P. Bellinger, MCZ 66789, PBI_OON 27023), 1♀. *St. Catherine:* 3 miles E Old Harbour, Oct. 21, 1957 (A. Chickering, MCZ 72159, PBI_OON 26992), 5♀; Innswood Estate, E end, Nov. 10, 1963 (A. Chickering, MCZ 72138, PBI_OON 27238), 1♀; Rio Cobre Gorge, Oct. 16, 1957 (A. Chickering, MCZ 72134, PBI_OON 27225), 1♀; School of Agriculture, Nov. 23, 1957 (A. Chickering, MCZ 72133, PBI_OON 27222), 3♂, 3♀, Nov. 21, 1957 (A. Chickering, MCZ 72164, PBI_OON 27324), 1♀. *St. Thomas:* Morant Bay, Oct. 29, 1957 (A. Chickering, MCZ 72247, PBI_OON 26990), 5♀; Morant Point, Mammee Bay, Oct. 14, 1959 (A. Chickering, MCZ 72157, PBI_OON 26995), 1♂, 1♀; Roselle Falls, Oct. 29, 1957 (A. Chickering, MCZ 72154, PBI_OON 26989), 1♀. **Puerto Rico:** *Naguabo:* Algodones Key, Oct. 15, 1964 (H. Heatwole, R. Levins, F. McKenzie, AMNH PBI_OON 1091), 1♂, 1♀. *San Juan:* San Juan, May 16, 1961 (H. Winn, MCZ 68338, PBI_OON 26765), 1♂. **Virgin Islands:** *St. Croix:* no specific locality, July 1966 (A. Chickering, MCZ 71904, PBI_OON 27011), 6♂, 10♀, Sept. 2, 1966 (A. Chickering, MCZ 71906, PBI_OON 27013), 40♂, 73♀, Sept. 8–9, 1966 (A. Chickering, MCZ 71907, 71910, PBI_OON 27012, 27018), 6♂, 6♀; Christiansted (Beatty, MCZ PBI_OON 516), 1♂, 2♀ (holotype, allotype, paratype); Frederiksted, Mar. 14–15, 1964 (A. Chickering, MCZ 72345, 72346, PBI_OON 26431, 26433), 1♂, 1♀; Lavaetz Garden, 2 mi from Frederiksted, Mar. 24, 1964 (A. Chickering, MCZ 72343, PBI_OON 26428), 1♀; Mahogany Road, 1 mi from Frederiksted, Mar. 23, 1964 (A. Chickering, MCZ 72344, PBI_OON 26419), 1♂, 1♀; Mahogany Road, 2 mi from Frederiksted, Mar. 21, 1964 (A. Chickering, MCZ 72502, PBI_OON 26934), 1♀. *St. John:* no specific locality, July 1966 (A. Chickering, MCZ 68222, PBI_OON 27020), 11♂, 48♀, July 23–24, 1966 (A. Chickering, MCZ 72336, 72338, PBI_OON 26423, 26435), 2♂, 2♀; Annaberg ruins, Mar. 5, 1964 (A. Chickering, MCZ 72342, PBI_OON 26417), 1♂, 3♀; near Butlers, June 6, 1974, Berlese, under rocks (W. Muchmore, AMNH PBI_OON 1223), 1♂, 5♀; Coral Bay, King Hill, July 18, 1975, leaf litter (W. Muchmore, AMNH PBI_OON 1222), 1♂; Cruz Bay, Feb. 29, 1964 (A. Chickering, MCZ 72340, 72341, PBI_OON 26420, 26434), 7♂, 11♀, Mar. 1, 1964 (A. Chickering, MCZ 72339, PBI_OON 26427), 4♂, 2♀, Mar. 7, 1964 (A. Chickering, MCZ 72337, PBI_OON 26422), 1♀. *St. Thomas:* no specific locality, July 1966 (A. Chickering, MCZ 71908, PBI_OON 27026), 10♂, 20♀, July 27, 1966 (A. Chickering, MCZ 71903, PBI_OON 27016), 15♂, 28♀, Aug. 13, 1966 (A. Chickering, MCZ 71905, PBI_OON 27024), 20♂, 34♀; Adams Guest House, Charlotte Amalie, Feb. 11, 1964 (A. Chickering, MCZ 72323, PBI_OON 26425), 1♂, 2♀; Charlotte Amalie, Feb. 9–12, 1964 (A. Chickering, MCZ 72726, 72329, PBI_OON 26415, 26436), 4♂, 2♀, Feb. 24, 1964 (A. Chickering, MCZ 72332, PBI_OON 26416), 10♂, 20♀; E side, Charlotte Amalie, Feb. 13–23, 1964, vacant lots (A. Chickering, MCZ 72322, 72324, 72327, 72334, PBI_OON 26418, 26429, 26430, 26437), 6♂, 11♀; Hassell's Island, Feb. 20, 1964 (A. Chickering, MCZ 72331, PBI_OON 26438), 5♂, 6♀; High School grounds, Charlotte Amalie, Feb. 22, 1964 (A. Chickering, MCZ 72333, PBI_OON 26426), 3♀, Mar. 10–11, 1964 (A. Chickering, MCZ 72325, 72328, PBI_OON 26421, 26432), 8♂, 7♀; Rosendal, N side of mountains, Feb. 21, 1964 (A. Chickering, MCZ 72335, PBI_OON 26424), 1♂, 1♀. *Tortola:* no specific locality, July 30–Aug. 5, 1966 (A. Chickering, MCZ 66788, PBI_OON

27017), 2♂, 10♀. **Leeward Islands:** *Nevis:* no specific locality, Sept. 24–29, 1966 (A. Chickering, MCZ 66796, PBI_OON 27022), 16♂, 32♀. **Windward Islands:** *St. Lucia:* no specific locality, Oct. 5–13, 1966 (A. Chickering, MCZ 66787, PBI_OON 27019), 3♂, 5♀. *St. Vincent:* no specific locality, Oct. 15–24, 1966 (A. Chickering, MCZ 66791, 72504, PBI_OON 26931, 27025), 4♂, 7♀. **Trinidad:** Simla, Apr. 5, 1964 (A. Chickering, MCZ 72220, PBI_OON 21221), 1♀, Apr. 20–23, 1964 (A. Chickering, MCZ 72223, PBI_OON 21217, 21224), 2♂, 2♀; Univ. of West Indies campus, St. Augustine, Apr. 1–9, 1964 (A. Chickering, MCZ 72216, 72218, 72219, 72221, 72222, 72224, PBI_OON 21216, 21218–21220, 21222, 21223), 38♂, 71♀, June 10, 1993, litter (S., J. Peck, FMNH 43138, PBI_OON 10681), 2♂, 3♀. SOUTH AMERICA: **Colombia:** *Magdalena:* Río Frío, banana plantation ca. 50 km SW Santa Marta, July 22, 1985, moist litter (H. Müller, MHNG PBI_OON 15583), 2♀. **Venezuela:** *Amazonas*: Puerto Ayacucho, O. Eisenberg's farm, Nov. 26, 1995, monocropped plot (I. Netuzhilin, MACN 17667, PBI_OON 14762), 1♀. *Sucre:* 10 km N Güiria, July 23, 1987, soil washing, coastal thorn scrub, elev. 2 m (S., J. Peck, AMNH PBI_OON 1232), 1♂, 1♀; Península de Araya, 13 km E Chacopata, July 27, 1987, soil washing, under beach trees (S., J. Peck, AMNH PBI_OON 45), 1♀. **Guyana:** *Essequibo:* Kartabo, July 3–12, 1982, Berlese, leaf pile (K., R. Schmidt, AMNH PBI_OON 1230), 1♂, 3♀. **Brazil:** *Pará:* Ipean Campo, 5 km E Belém, May 2, 1974 (R. Schuh, AMNH PBI_OON 485–487), 2♂, 1♀. OLD WORLD: **Gambia:** Banjul, 13°27′36″N, 16°34′45″W, bird garden, leaf litter, Oct. 20, 2008 (Y. Marusik, AMNH PBI_OON 515), 13♂, 19♀. **Sierra Leone:** no specific locality, Mocquerys (MNHN AR5758, PBI_OON 25575), 1♀ (holotype). **Mascarene Islands:** *Mauritius:* Grand Port: Île aux Aigrettes, May 23, 2003 (BMNH PBI_OON 501), 1♀. *Réunion:* La Bretagne, Jan. 23, 1989, moist roadside, elev. ca. 400 m (H. Müller, MHNG PBI_OON 12143), 1♂; near Savannah, Feb. 1, 1989, moist soil near ruin walls (H. Müller, MHNG PBI_OON 12158), 1♂. **Seychelle Islands:** no specific locality, Jan. 25, 1977 (A. Rundle, AMNH PBI_OON 36797), 2♀, Feb. 2, 1977 (A. Rundle, AMNH PBI_OON 36796), 1♀, Feb. 5, 1977 (A. Rundle, AMNH PBI_OON 36795), 1♀. *Bird Island:* no specific locality, Mar. 24, 2000, pitfall (ZMUT 1576, PBI_OON 502), 1♀. *Cousine:* W end, Jan. 25, 1999, coconut leaves (M. Saaristo, ZMUT 1206, PBI_OON 504), 1♀. *Silhouette:* La Passe, Jan. 21, 1999, sifting pile of rotten *Ipomea* stems and coconut leaves (M. Saaristo, ZMUT 1205, PBI_OON 503), 1♀. **Yemen:** *Al Mahwit:* Khamis Bani Sa'd, June 23, 1999, banana plantation, leaf litter (A. van Harten, ZMUT 3029, PBI_OON 509), 1♂, 1♀, July 27, 1999, same (ZMUT 3030, PBI_OON 507), 1♂, 3♀, Aug. 31, 1999, same (ZMUT 3031, PBI_OON 508), 1♀, Mar. 28, 2000 (A. van Harten, ZMUT 3027, PBI_OON 505), 1♀, June 14–15, 2000, banana plantation, leaf litter (A. van Harten, ZMUT 3028, PBI_OON 506), 3♂, 2♀. **Pakistan:** *Sindh:* University campus, Karachi, Sept. 18, 1978 (P. Lehtinen, ZMUT 3213, PBI_OON 510), 1♂, 2♀. **India:** *Tamil-Nadu:* Alagarkovil, 21 km N Madurai, Nov. 2, 1972, sifting near river, elev. 250–350 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12759), 1♂. **Sri Lanka:** *Western:* Moragalla, surroundings of Wornels Reef Hotel, May 5, 1989, litter (H. Müller, MHNG PBI_OON 12500), 1♂. **Philippine Islands:** *Palawan:* Irawan, Aug. 23, 1981, low jungle litter (P. Lehtinen, ZMUT 3160, PBI_OON 511), 1♀. **Mariana Islands:** *Guam:* University of Guam, Mar. 13, 1969 (E. Sabath, MCZ 72492, PBI_OON 28160), 2♂, 15♀. **Marshall Islands:** *Kwajalein:* South Gugeegu, July 24, 1969, Scavola/Pandanus litter (JAB PBI_OON 494), 1♀. **Caroline Islands:** *Palau:* Koror, Mar. 30, 1973, compost pile (J. Beatty, JAB PBI_OON 38381), 1♀, Apr. 14, 1973, under lawn grass (J. Beatty, JAB PBI_OON 492), 1♀. *Ponape:* Kolonia, June 3, 1973, roadside near Rainbow Hotel (J. Beatty, JAB PBI_OON 493), 1♀. *Yap:* Colonia, June 1, 1973, grass in cemetery (J. Beatty, J. Berry, JAB PBI_OON 38313), 3♂, 2♀; Ulitha Atoll, Falalop Island, May 2, 1980, coconut forest litter (J. Berry, JAB PBI_OON 23489), 1♀. **Marquesas Islands:** *Nuka Hiva:* near Governors' residence, Taiohae, Jan. 21, 1987, Ipomea beach litter (J. Beatty, JAB PBI_OON 496), 1♀; near Technical School, Taiohae, Jan. 25, 1987, acacia litter (J. Beatty, JAB PBI_OON 498), 2♂, 5♀; Taiohae, Jan. 22, 1987, pile of litter in drainage channel (J. Berry, JAB PBI_OON 38314), 1♂, 1♀, Jan. 24, 1987, litter near beach (J. Berry, JAB PBI_OON 497), 1♀. **Tuamotu Islands:** *Rangiroa:* Aratorua Motu, June 7, 1987 (E. Berry, JAB PBI_OON 495), 1♂; Avatoru, lagoon meadow and beach litter, Mar. 22, 1990 (P. Lehtinen, ZMUT 3314, PBI_OON 512), 1♀. **Society Islands:** *Moorea:* Paopao, Feb. 19, 1987, grass clump on beach (J. Berry, JAB PBI_OON 38312), 2♂. **Sulawesi:** *Sulawesi Tengah:* Donggala, Palu, Oct. 27, 1979, in garden (P. Lehtinen, ZMUT 3211, PBI_OON 513), 1♂. *Sulawesi Utara:* Gorontalo, Datahu River valley, Oct. 24, 1979, grass, litter (P. Lehtinen, ZMUT PBI_OON 26049), 1♀. **Banda Islands:** *Lonthoir* (Pulau Banda Besar): Selamon, Jan. 27, 1995, bamboo litter (C. Deeleman, NML PBI_OON 31591), 1♀; Waling, Jan. 19, 1995, leaf litter (C. Deeleman, NML PBI_OON 31588), 1♂. **Australia:** *Queensland:* Port Douglas, July 7, 1982, flood debris beach drift (S., J. Peck, AMNH PBI_OON 5287), 1♂, 6♀.

DISTRIBUTION: Pantropical.

New World Species

Aside from *B. parumpunctata*, at least two additional species occur in the New World. One, *B. dasysterna*, new species, is known only from far southern Florida. Although one might expect a species with that distribution to be introduced, it has highly distinctive setae on the sternum of males that have not been detected in any other species. Under an ordinary dissecting microscope, these setae appear similar to those of *Cavisternum* Baehr et al. (2010), but scanning electron microscopy shows them to be intricate and unlike those of any other spiders we have examined (fig. 116). Far southern Florida also houses *B. cobre*, new species, but the distribution of that taxon also extends widely into the West Indies.

Brignolia dasysterna, new species
Figures 95–141

Opopaea deserticola (misidentification): Platnick and Dupérré, 2009: 4 (in part, females from southern Florida listed below only).

TYPES: Male holotype and female allotype taken in Berlese samples of young hammock forest litter at Deering Estate Park, SW 167th St. and SW 72nd Ave., S Miami, Dade Co., Florida (June 1–Aug. 25, 1986; J. and S. Peck), deposited in AMNH (PBI_OON 1270, 37534).

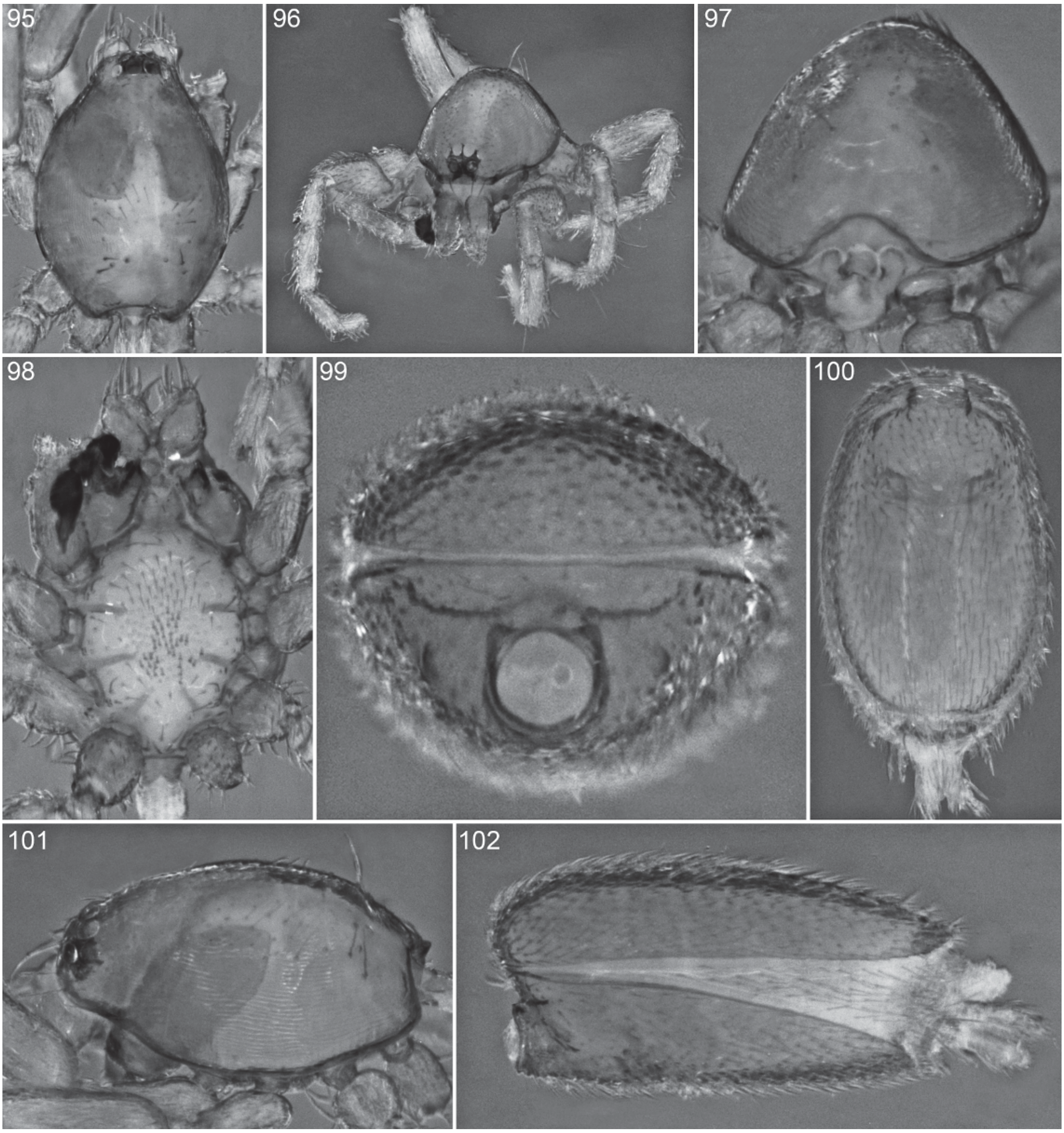
ETYMOLOGY: The specific name is Latinized from the Greek adjective *dasysternus* (“with shaggy breast”), referring to the elaborately modified setae on the sternum of males.

DIAGNOSIS: Males can easily be recognized by the modified setae on the sternum (figs. 98, 115, 116), females by the long and curved (but untwisted) posterior genitalic tube (figs. 136–141)

MALE (PBI_OON 37533, figs. 95–118): Total length 1.58. Carapace pale orange, with dark brown egg-shaped patches behind eyes; pars cephalica slightly elevated in lateral view, posterolateral edge with pair of pits, posterior declivity without distinct shoulders, posterior margin rounded. Sternum without pits but median portion of sternum coated with elaborately plumose setae originating from surface. Scuto-pedicel region with medially weak W-shaped scutal ridge, with low tubercles opposite pedicel triangles. Palpal tibia expanded ventrally at tip; embolus tip highly crenulated.

FEMALE (PBI_OON 1298, figs. 119–141): Total length 1.67. Sternum without highly plumose setae. Posterior genitalic tube with transverse anterior portion, long, distally curved posterior portion.

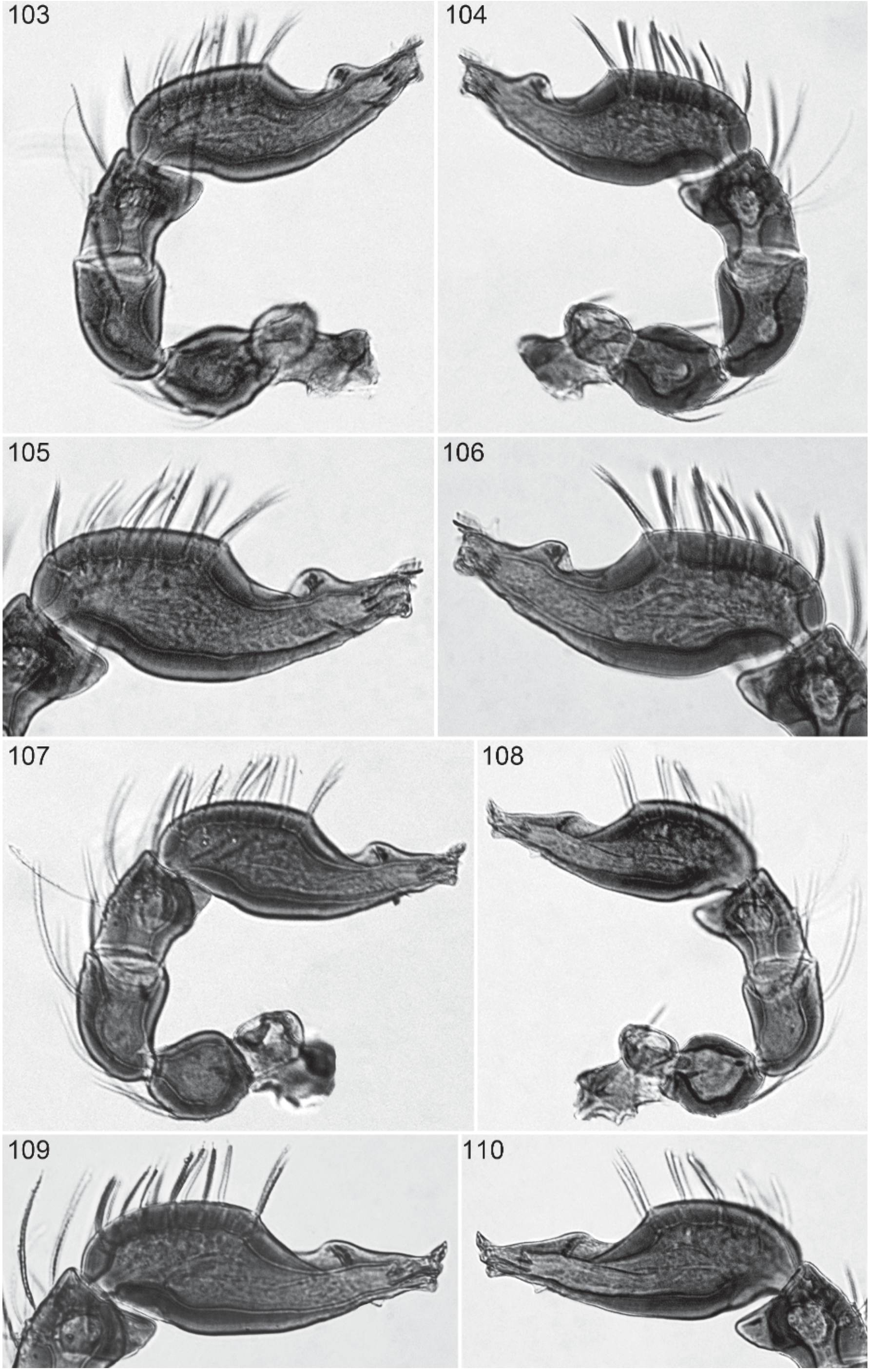
OTHER MATERIAL EXAMINED: NORTH AMERICA: **United States:** *Forida:* Dade Co.: Deering Estate Park, SW 167th St. and SW 72nd Ave., S Miami, Nov. 15, 1985, hammock forest litter (S. Peck, AMNH PBI_OON 1295, 37533), 12♂, 10♀, Nov. 15–23, 1985, pitfall trap (S. Peck, AMNH PBI_OON 1284), 2♀, June 1–Aug. 25, 1986, young hammock forest, malaise flight intercept trap (S., J. Peck, AMNH PBI_OON 1268, 1285, 37509), 1♂, 3♀, Aug. 26, 1986, forest soil washing (S., J. Peck, AMNH PBI_OON 1260), 1♂, Dec. 9, 1986, forest litter (Klimaszewski, Peck, AMNH PBI_OON 1293, 37507), 4♂, 2♀; Matheson Hammock Park, 9800 Old Cutler



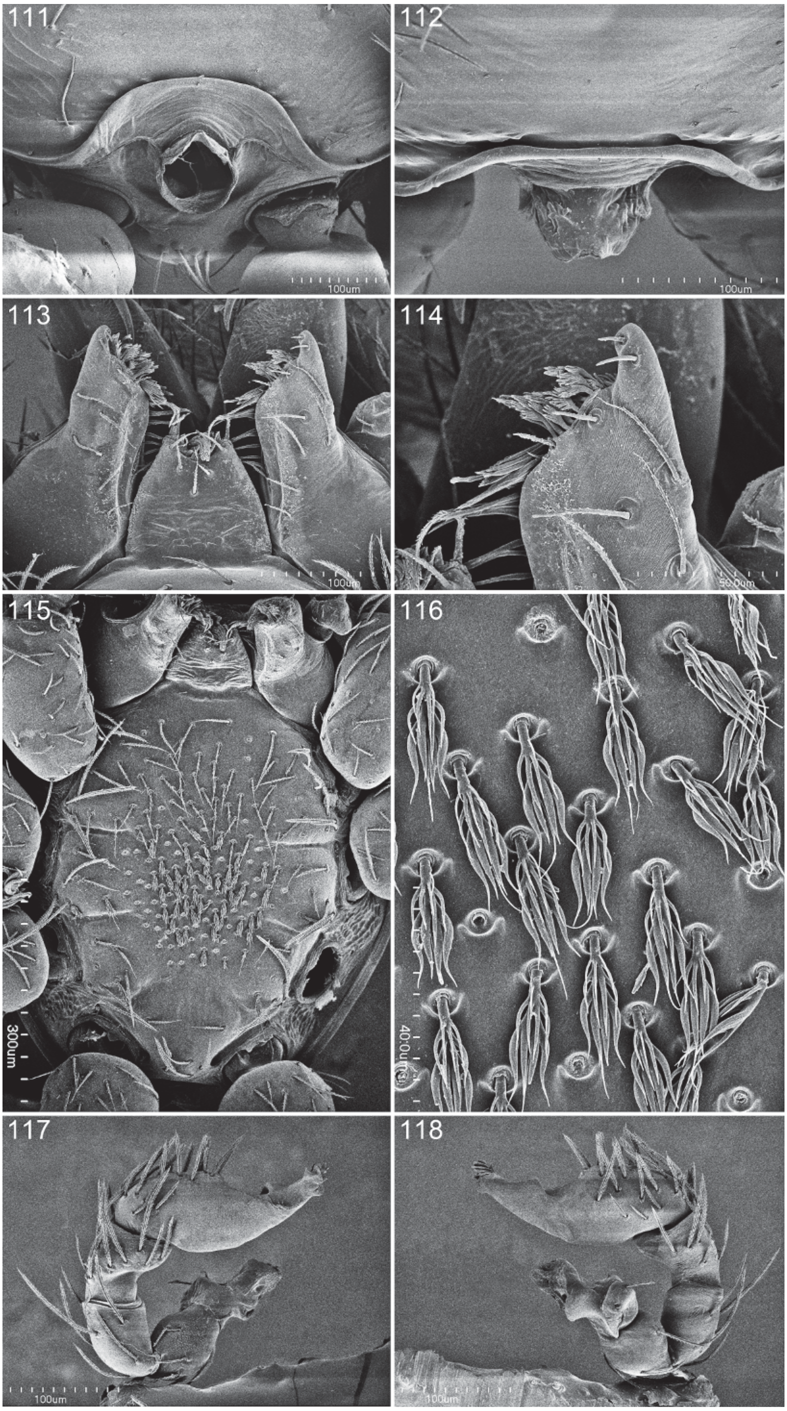
Figs. 95–102. *Brignolia dasysterna*, new species, male. **95.** Carapace, dorsal view. **96.** Same, anterior view. **97.** Same, posterior view. **98.** Cephalothorax, ventral view. **99.** Abdomen, anterior view. **100.** Same, ventral view. **101.** Carapace, lateral view. **102.** Abdomen, lateral view.

Road, S Miami, Nov. 14, 1985, hammock litter (S. Peck, AMNH PBI_OON 1298, 37508), 3♂, 13♀, Aug. 27, 1986, Berlese, oak hammock forest litter (S., J. Peck, AMNH PBI_OON 1256), 1♂. Monroe Co.: Kitching's, Sugarloaf Key, Feb. 26–June 6, 1986, forest hammock malaise/flight intercept trap (S., J. Peck, AMNH PBI_OON 1258), 1♀.

DISTRIBUTION: Known only from three sites in Dade and Monroe Counties, far southern Florida.



Figs. 103–110. *Brignolia dasysterna*, new species, male (top, specimen from Deering Estate Park, PBI_OON 1260; bottom, specimen from Matheson Hammock Park, PBI_OON 37508). **103, 107.** Left palp, prolateral view. **104, 108.** Same, retrolateral view. **105, 109.** Left palpal bulb, prolateral view. **106, 110.** Same, retrolateral view.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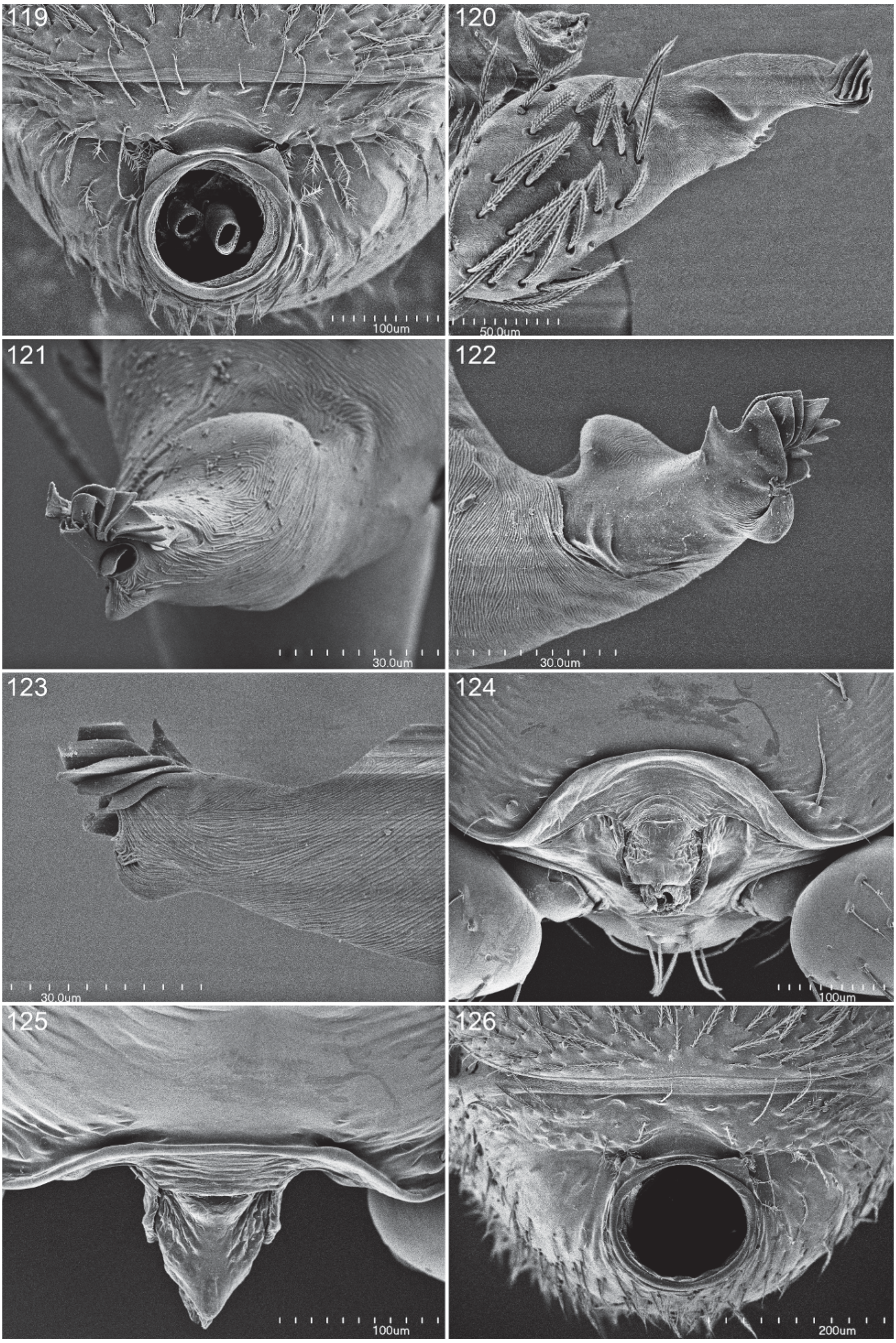
Figs. 111–118. *Brignolia dasysterna*, new species, male. **111.** Carapace, posterior view. **112.** Posterior margin of carapace, dorsal view. **113.** Labium and endites, ventral view. **114.** Tip of endite, ventral view. **115.** Cephalothorax, ventral view. **116.** Modified setae on sternum, ventral view. **117.** Left palp, prolateral view. **118.** Same, retrolateral view.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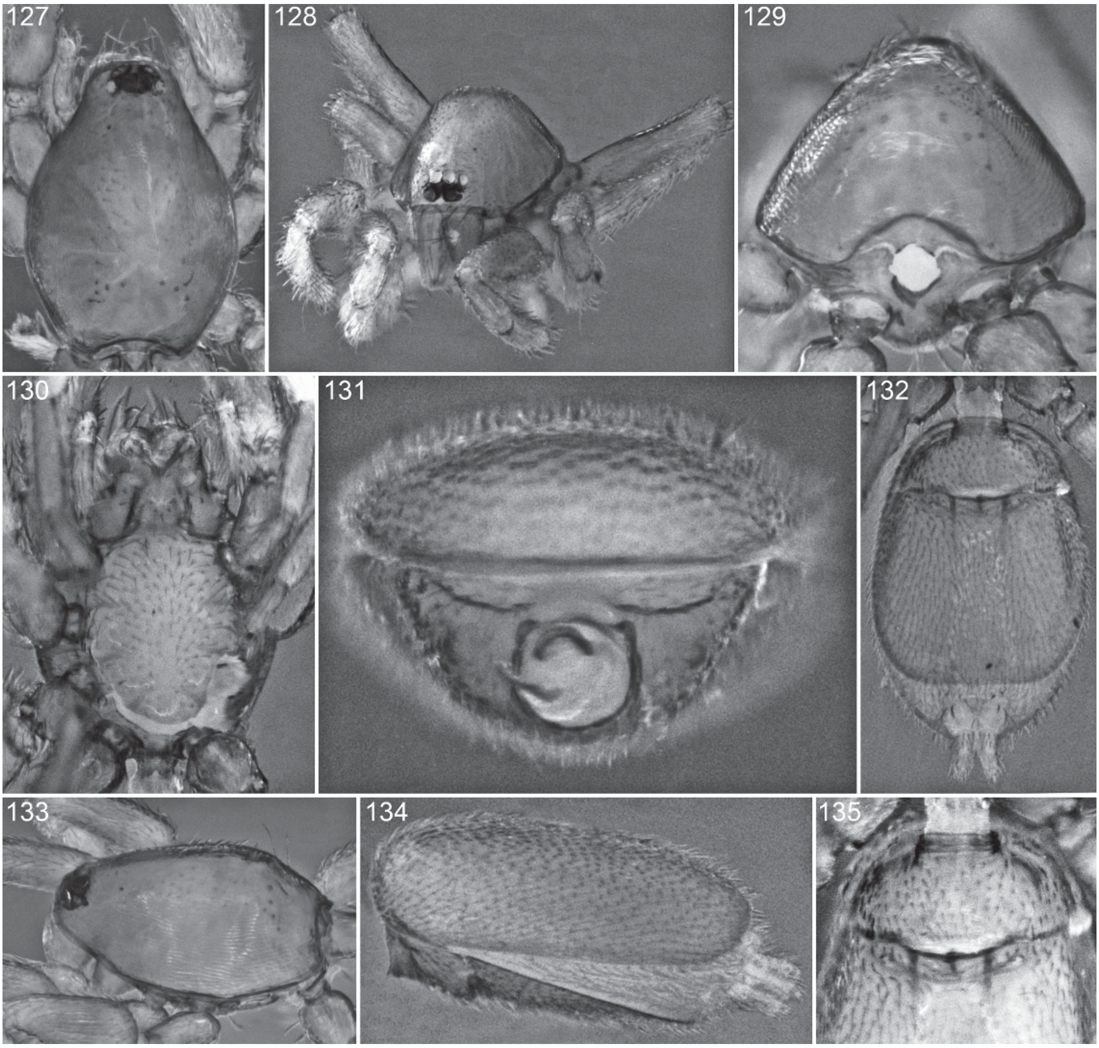
Figs. 119–126. *Brignolia dasysterna*, new species. **119.** Male abdomen, anterior view. **120.** Left male palp, dorsal view. **121.** Left male embolus, ventral view. **122.** Same, prolateral view. **123.** Same, retrolateral view. **124.** Female carapace, posterior view. **125.** Female carapace, posterior margin, dorsal view. **126.** Female abdomen, anterior view.



Figs. 127–135. *Brignolia dasysterna*, new species, female. **127.** Carapace, dorsal view. **128.** Same, anterior view. **129.** Same, posterior view. **130.** Cephalothorax, ventral view. **131.** Abdomen, anterior view. **132.** Same, ventral view. **133.** Carapace, lateral view. **134.** Abdomen, lateral view. **135.** Epigastric region, ventral view.

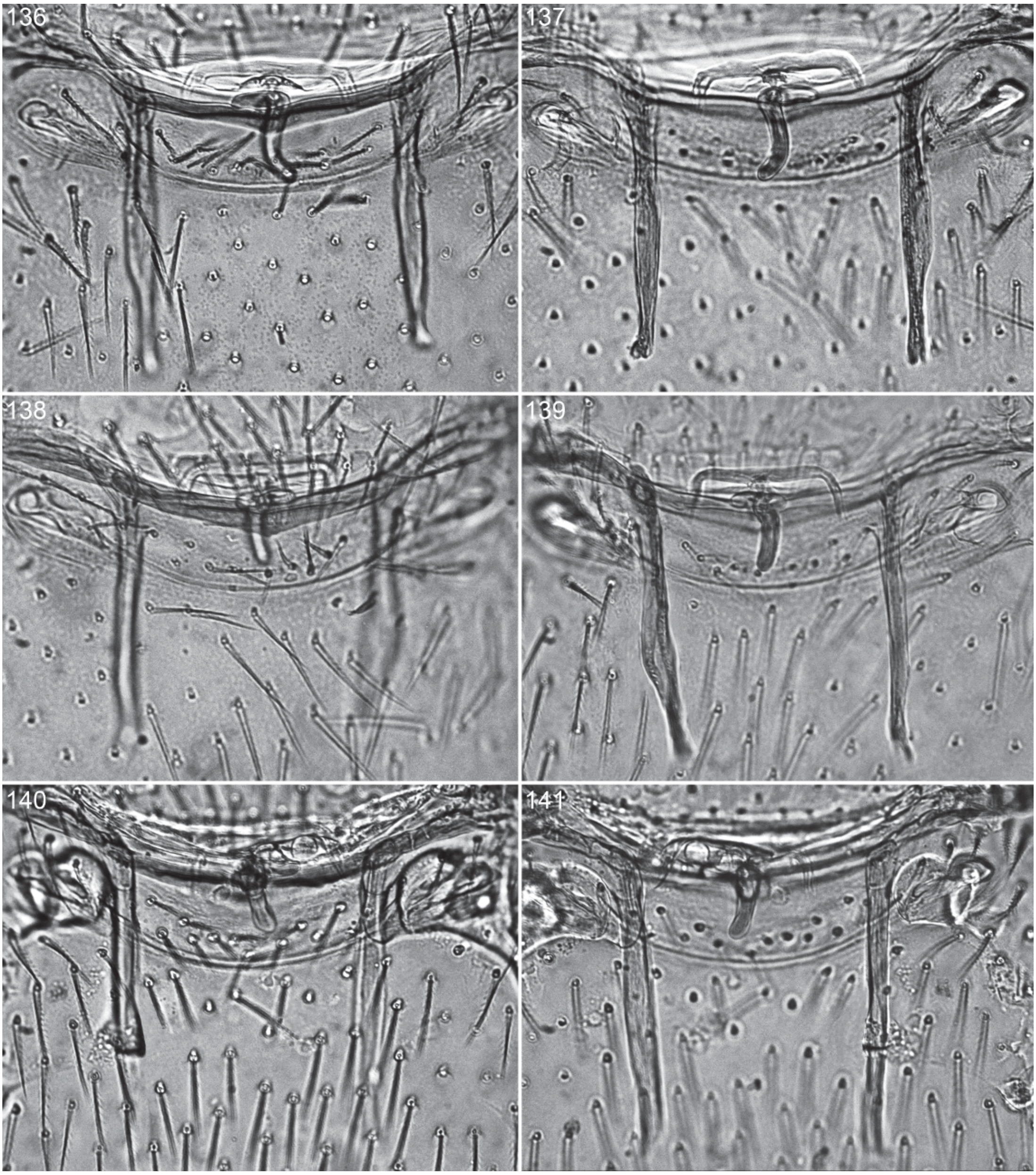
Brignolia cobre, new species
Figures 142–189

Opopaea deserticola (misidentification): Platnick and Dupérré, 2009: 4 (in part, females from southern Florida listed below only).

TYPES: Male holotype and female allotype taken in leaf litter at the Botanical Garden on Stock Island, Monroe Co., Florida (Dec. 17, 1986; S. Peck, Klimaszewski), deposited in AMNH (PBI_OON 37510, 1294).

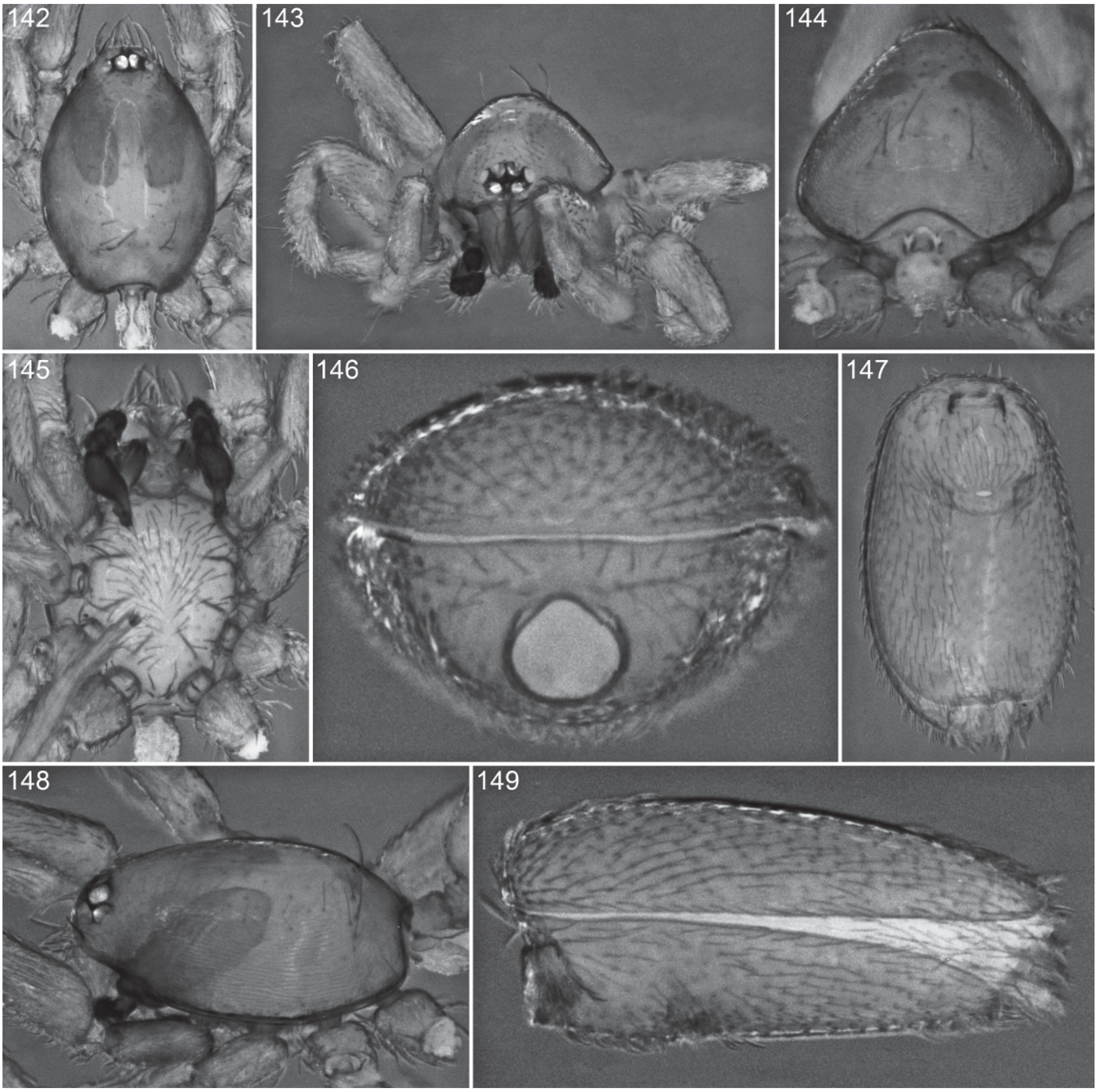
ETYMOLOGY: The specific name is a noun in apposition taken from one of the Cuban localities at which the species has been collected.

DIAGNOSIS: Males resemble those of *B. dasysterna* but lack the modified setae on the sternum and have the dorsal lobe on the palpal bulb situated much closer to the tip of the embolus (figs. 150–160); females can be recognized by the dorsally projecting posterior genitalic tube, which is greatly widened at its tip (figs. 184–189).



Figs. 136–141. *Brignolia dasysterna*, new species, female (top, specimen from Deering Estate Park, PBI_OON 1270; middle, specimen from Matheson Hammock Park, PBI_OON 1298; bottom, specimen from Sugarloaf Key, PBI_OON 1258). **136, 138, 140.** Genitalia, ventral view. **137, 139, 141.** Same, dorsal view.

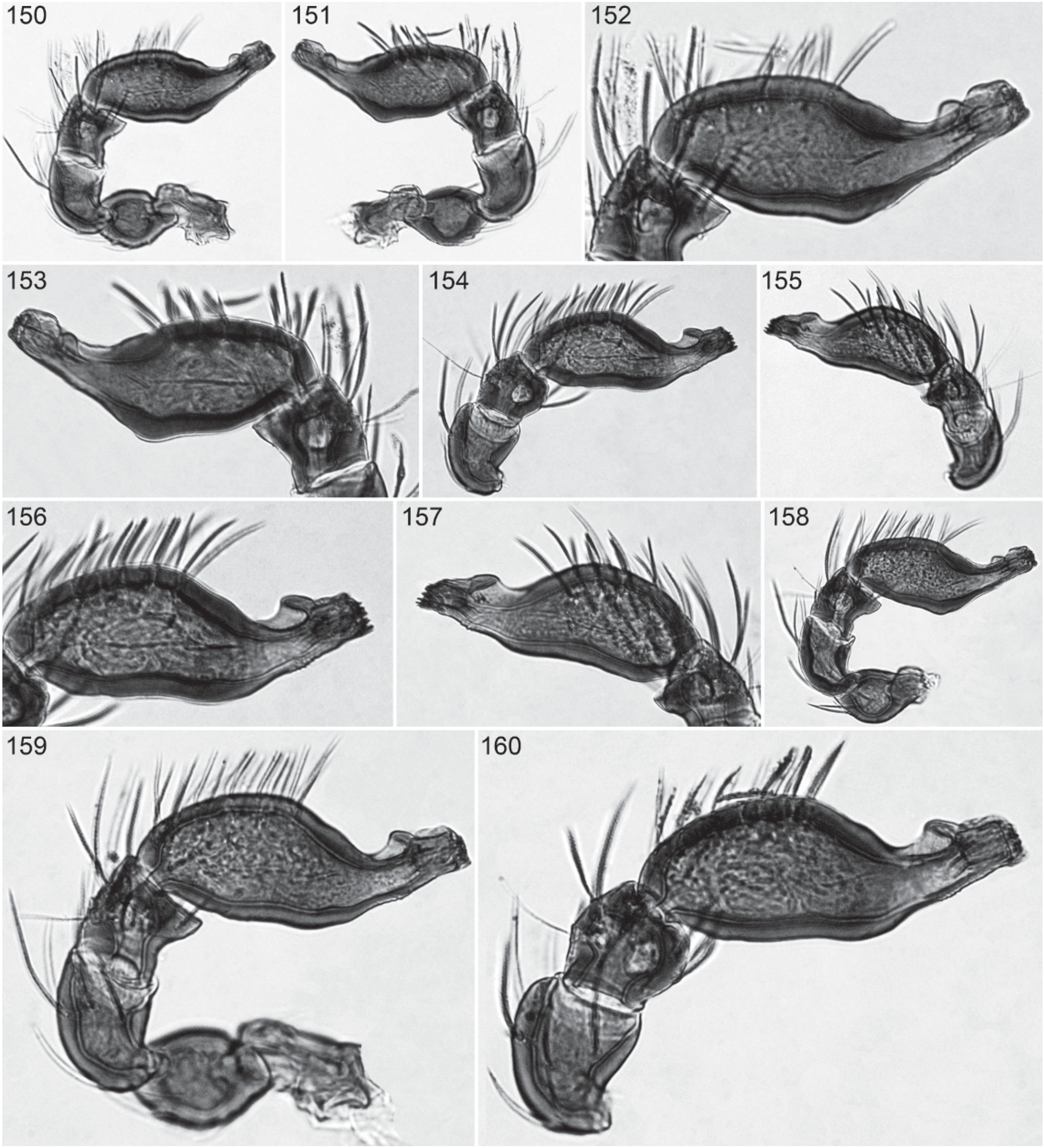
MALE (PBI_OON 489, figs. 142–171): Total length 1.32. Carapace pale orange, with dark brown egg-shaped patches behind eyes; pars cephalica slightly elevated in lateral view; posterolateral edge without pits, posterior declivity without distinct shoulders, posterior margin rounded. Sternum without pits. Scuto-pedicel region with medially weak W-shaped scutal ridge, without tubercles. Embolus tip with numerous ledgelike ridges.



Figs. 142–149. *Brignolia cobre*, new species, male. **142.** Carapace, dorsal view. **143.** Same, anterior view. **144.** Same, posterior view. **145.** Cephalothorax, ventral view. **146.** Abdomen, anterior view. **147.** Same, ventral view. **148.** Carapace, lateral view. **149.** Abdomen, lateral view.

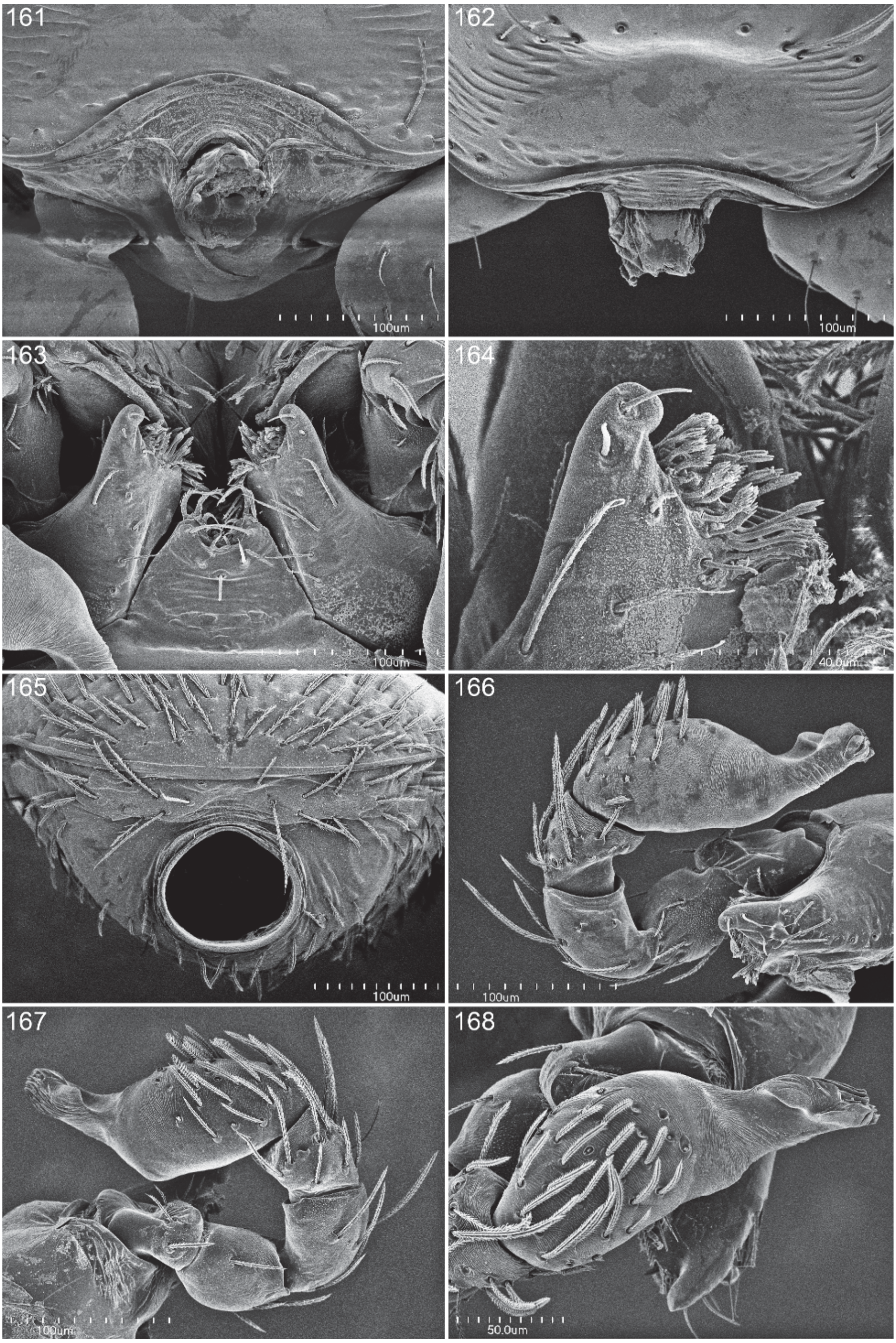
FEMALE (PBI_OON 489, figs. 172–189): Total length 1.43. Posterior tube genitalic extending dorsally, tip apparently bifid.

OTHER MATERIAL EXAMINED: NORTH AMERICA: **United States:** *Florida:* Monroe Co.: Botanical Garden, Stock Island, Nov. 19, 1985, hammock leaf litter (S., J. Peck, AMNH PBI_OON 1261), 1♀, Dec. 17, 1986, leaf litter (S. Peck, Klimaszewski, AMNH PBI_OON 37510), 3♂, same (AMNH PBI_OON 1294), 1♀; Kitching's, Sugarloaf Key, Nov. 3, 1984, Berlese, hammock litter (S., J. Peck, AMNH PBI_OON 481), 1♂; No Name Key, 0.5 mi on Watson Road from bridge, 24°41.85′N, 81°19.70′W, Aug. 22, 2009, elev. 8 m (C. Moreau, FMNH 56507, PBI_OON 10749), 1♂. WEST INDIES: **Cuba:** *Santiago de Cuba:* El Cobre, Municipio Santiago de Cuba, 20°02′48″N, 75°56′20″W, May 7, 2010 (N. Platnick, A.



Figs. 150–160. *Brignolia cobre*, new species, male (150–153, Florida, PBI_OON 37510; 154–157, Cuba, PBI_OON 488; 158, Jamaica, PBI_OON 499; 159, St. John, PBI_OON 500; 160, St. Thomas, PBI_OON 26675). **150, 154, 158–160.** Left palp, prolateral view. **151, 155.** Same, retrolateral view. **152, 156.** Left palpal bulb, prolateral view. **153, 157.** Same, retrolateral view.

Sánchez, A. Pérez, G. Alayón, AMNH, BSC PBI_OON 489), 6♂, 4♀; Mata Yegua, 2 km NE El Escandel, Municipio Santiago de Cuba, 20°05′34″N, 75°41′49″W, May 10, 2010 (N. Platnick, A. Sánchez, A. Pérez, G. Alayón, BSC PBI_OON 488), 1♂. **Jamaica:** *St. Andrew:* Mona Road, Nov. 15, 1963 (A. Chickering, MCZ PBI_OON 499), 1♂. **Virgin Islands:** *St. John:* no specific locality, July 1966 (A. Chickering, MCZ ex 68222, PBI_OON 500), 1♂. *St. Thomas:* no specific locality, Aug. 28, 1966 (A. Chickering, MCZ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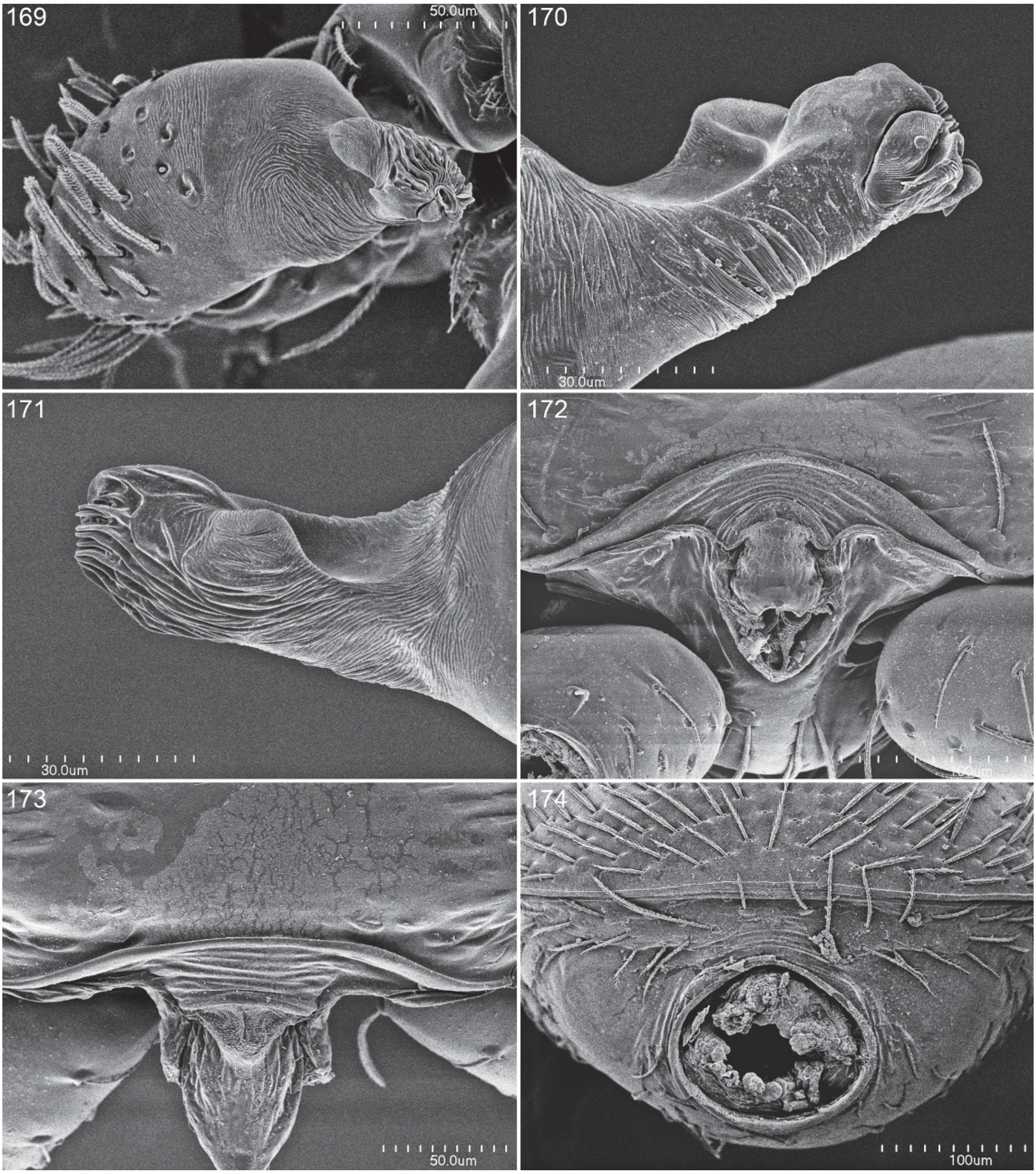
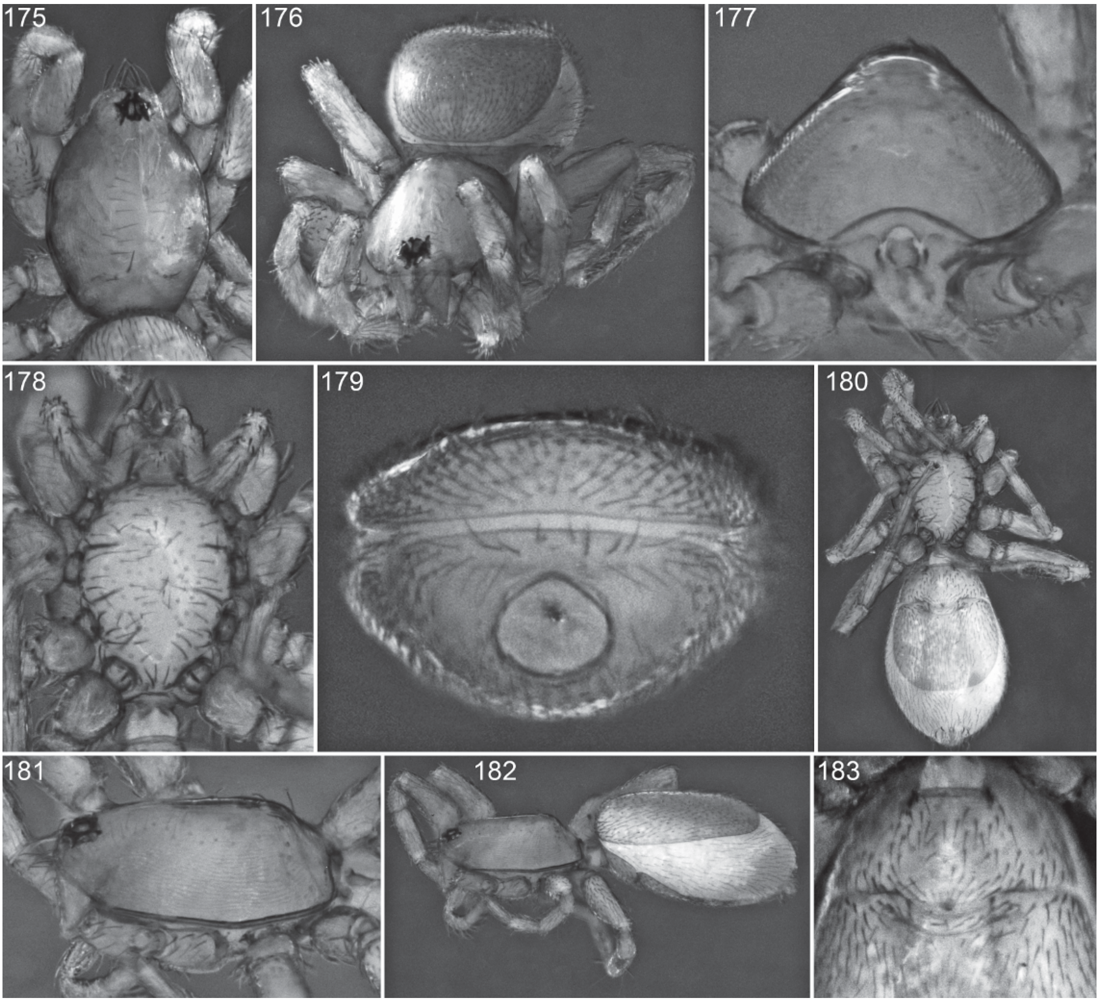
Figs. 161–168. *Brignolia cobre*, new species, male. **161.** Carapace, posterior view. **162.** Posterior margin of carapace, dorsal view. **163.** Labium and endites, ventral view. **164.** Tip of endite, ventral view. **165.** Abdomen, anterior view. **166.** Left palp, prolateral view. **167.** Same, retrolateral view. **168.** Left palpal bulb, dorsal view.



Figs. 169–174. *Brignolia cobre*, new species. **169.** Left male embolus, ventral view. **170.** Same, prolateral view. **171.** Same, retrolateral view. **172.** Female carapace, posterior view. **173.** Posterior margin of female carapace, dorsal view. **174.** Female abdomen, anterior view.

72330, PBI_OON 26675), 1♂. **Leeward Islands:** *Antigua:* St. John Parish: Galley Beach, E Manzanilla Woods, Jan. 15, 1986, basal core, palm stump/trunk with termites (D. Field, W. Suter, FMNH 56493, PBI_OON 10734), 1♀.

DISTRIBUTION: Far southern Florida and the West Indies.



Figs. 175–183. *Brignolia cobre*, new species, female. **175.** Carapace, dorsal view. **176.** Habitus, anterior view. **177.** Carapace, posterior view. **178.** Cephalothorax, ventral view. **179.** Abdomen, anterior view. **180.** Habitus, ventral view. **181.** Carapace, lateral view. **182.** Habitus, lateral view. **183.** Epigastric region, ventral view.

Old World Species

The majority of the known species are from India, but (aside from the pantropical *B. parumpunctata*) the genus occurs quite widely in the Old World, from Mauritius and the Seychelles through Sri Lanka, India, and Southeast Asia to the Philippines and Borneo.

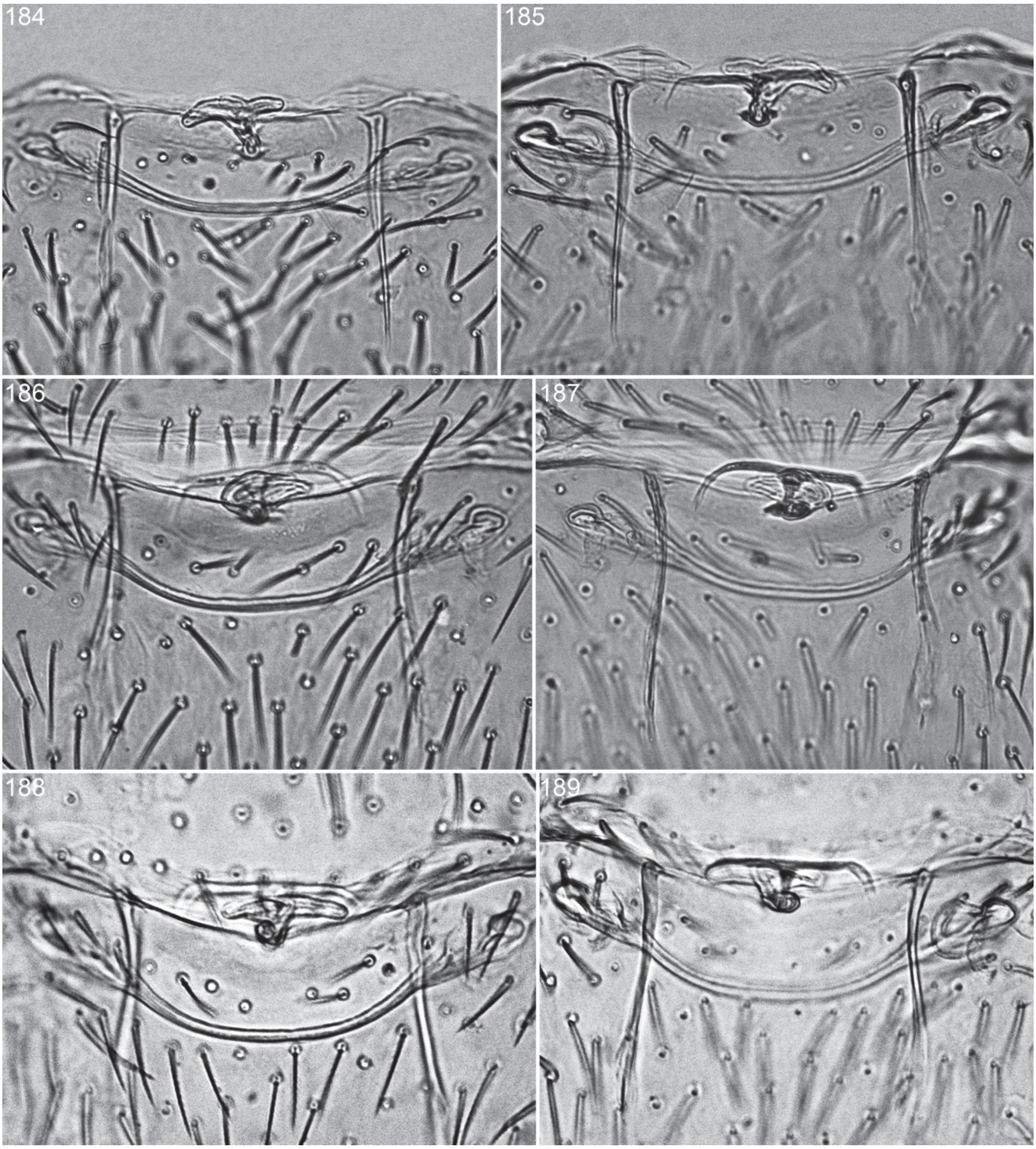
Brignolia trichinalis (Benoit), new combination
Figures 190–223

Gamasomorpha trichinalis Benoit, 1979: 192, figs. 2A–E (holotype female and allotype male from Vallée de Mai, Praslin, Seychelle Islands, in MRAC; examined).

Lisna trichinalis: Saaristo, 2001: 342, figs. 131–138.

DIAGNOSIS: Males can easily be recognized by the extended lobe at the tip of the palp (figs. 198–205), females by the long epigastric scape (figs. 221–223).

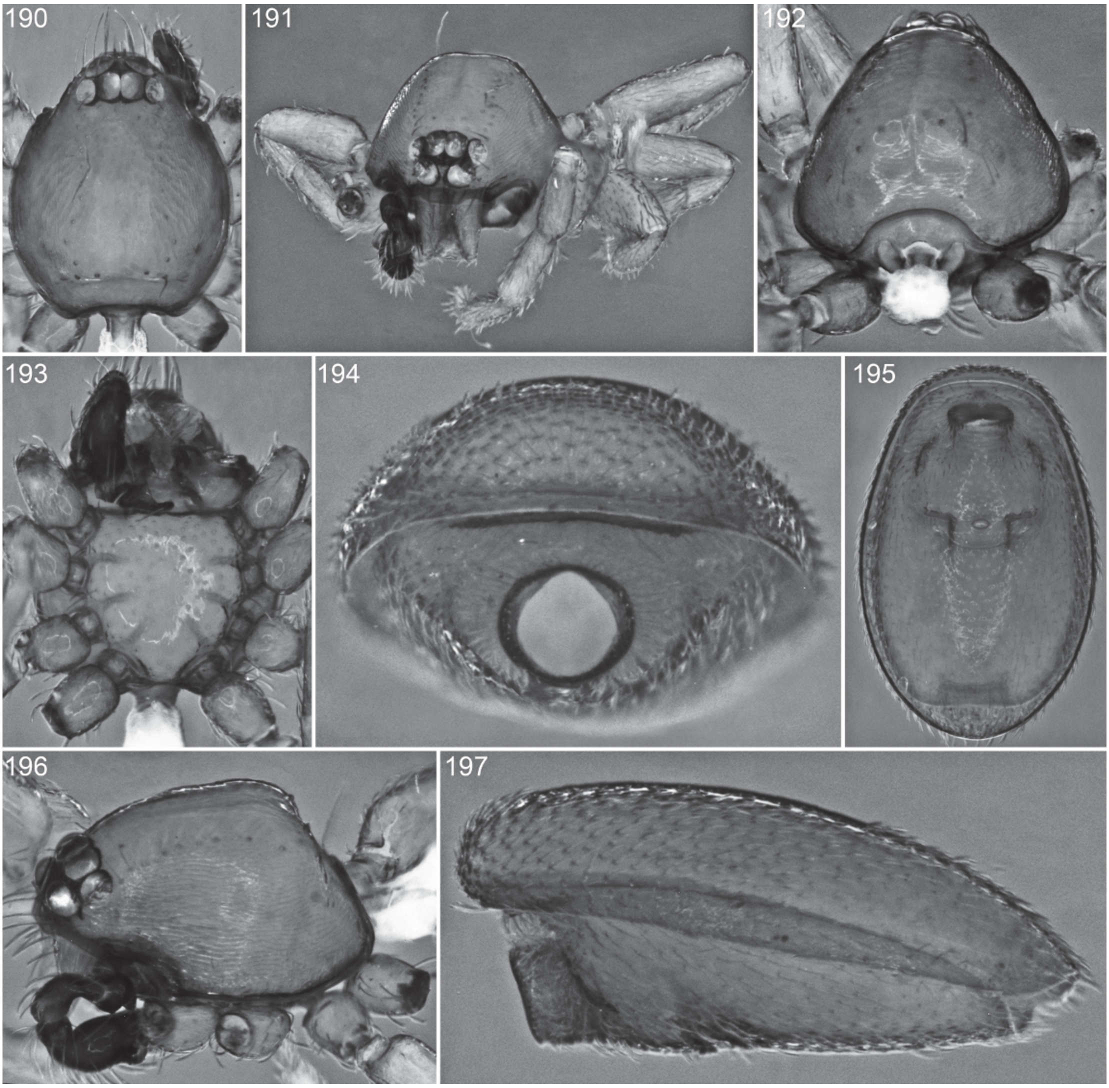
MALE (PBI_OON 35285, figs. 190–210): Total length 1.88. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view, posterolateral edge without pits, posterior declivity steep, top margin with two enlarged setae on each



Figs. 184–189. *Brignolia cobre*, new species, female (top, Florida, PBI_OON 1294; middle, Cuba, PBI_OON 489; bottom, Antigua, PBI_OON 10734). **184, 186, 188.** Genitalia, ventral view. **185, 187, 189.** Same, dorsal view.

side but without distinct tubercles, posterior margin rounded. Sternum with small pits. Scuto-pedicel region with medially weak, W-shaped scutal ridge almost straight, without tubercles. Palpal femur very short, dorsoventrally dilated, patella distinctly bent at midlength, tibia very short, bulb elongated, distal portion long, with deep incision on prolateral side, distally recurved.

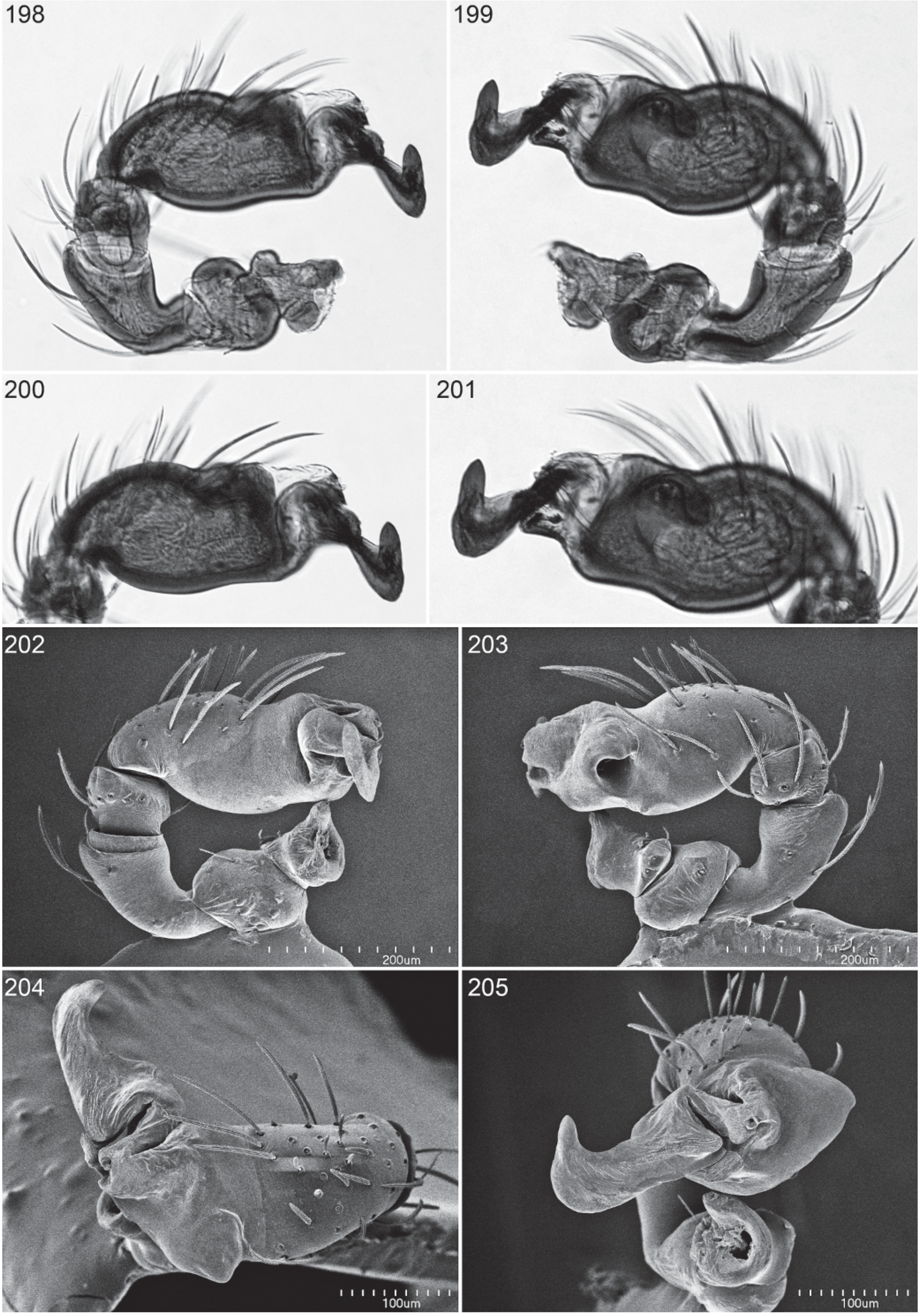
FEMALE (PBI_OON 35268, figs. 211–223): Total length 1.73. Epigastric area with



Figs. 190–197. *Brignolia trichinalis* (Benoit), male. **190.** Carapace, dorsal view. **191.** Same, anterior view. **192.** Same, posterior view. **193.** Cephalothorax, ventral view. **194.** Abdomen, anterior view. **195.** Same, ventral view. **196.** Carapace, lateral view. **197.** Abdomen, lateral view.

distinct scape; posterior tube reaching only as far as anterior edge of scape.

MATERIAL EXAMINED: **Mascarene Islands:** *Mauritius:* Black River: Bambous, Brise Mt., 20°20′44″S, 57°45′17″E, May 27, 2005, sifted litter, elev. 200 m (B. Fisher et al., CAS 38491, PBI_OON 35285), 1♂; Grand Port: Île aux Aigrettes, 20°25′08″S, 57°43′50″E, May 28, 2005, sifted litter, elev. 1 m (B. Fisher et al., CAS 36061, PBI_OON 35268), 1♀. **Seychelle Islands**: no specific locality, Jan. 31, 1977 (A. Rundle, AMNH PBI_OON 36778), 1♀. *Grand Soeur:* no specific locality, Sept. 10, 1975 (M. Mühlenberg, MRAC 212610, PBI_OON 5480), 1♀, Sept. 17, 1975 (M. Mühlenberg, MRAC177136, PBI_OON 5418), 1♀. *Mahé:* Poules Bleues, Sept. 1976 (G. Marlier, MRAC 148420, PBI_OON 29124), 1♂. *Praslin:* Vallée de Mai, July 25, 1972,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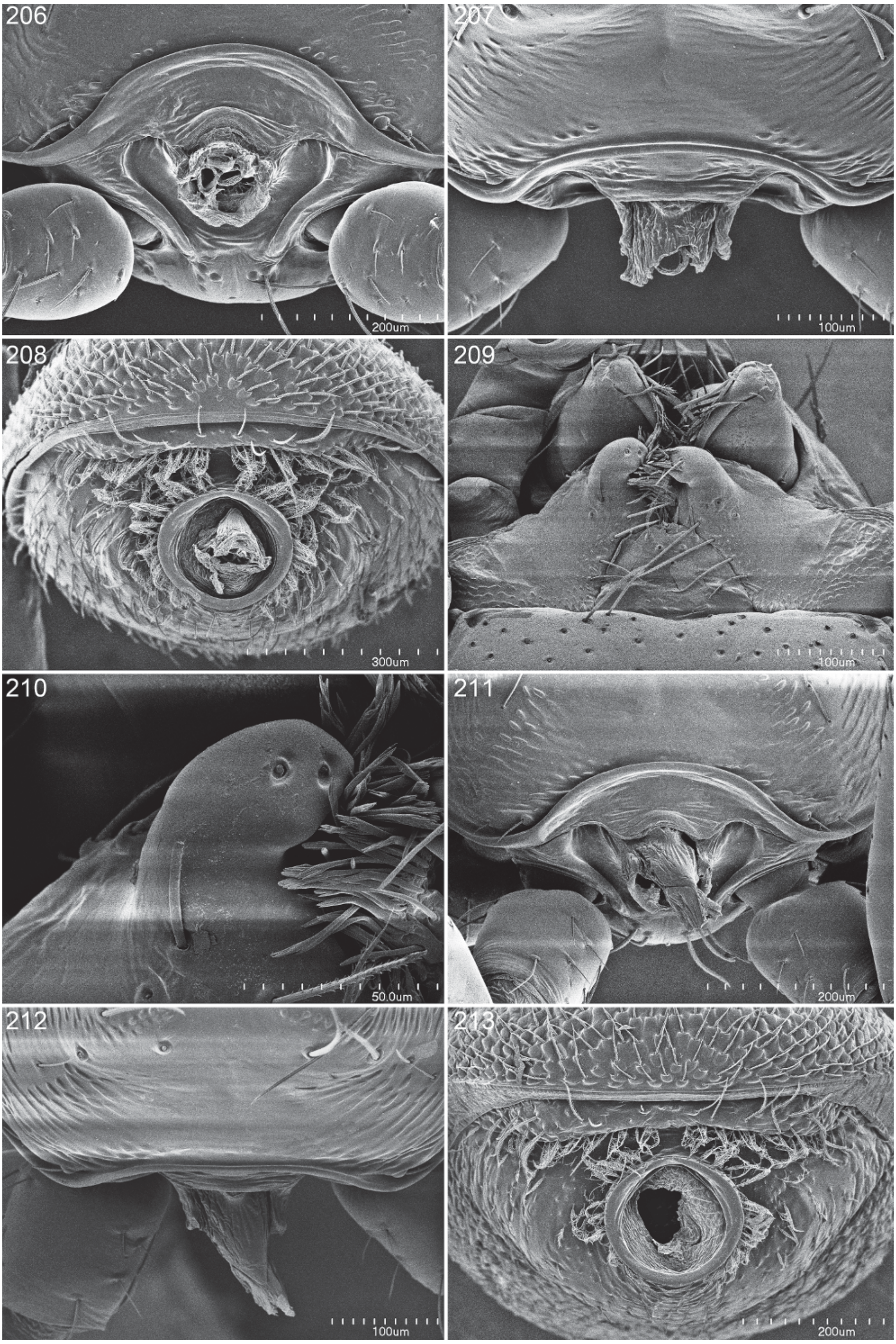
Figs. 198–205. *Brignolia trichinalis* (Benoit), male. **198, 202.** Left palp, prolateral view. **199, 203.** Same, retrolateral view. **200.** Left palpal bulb, prolateral view. **201.** Same, retrolateral view. **204.** Same, dorsal view. **205.** Same, ventral view.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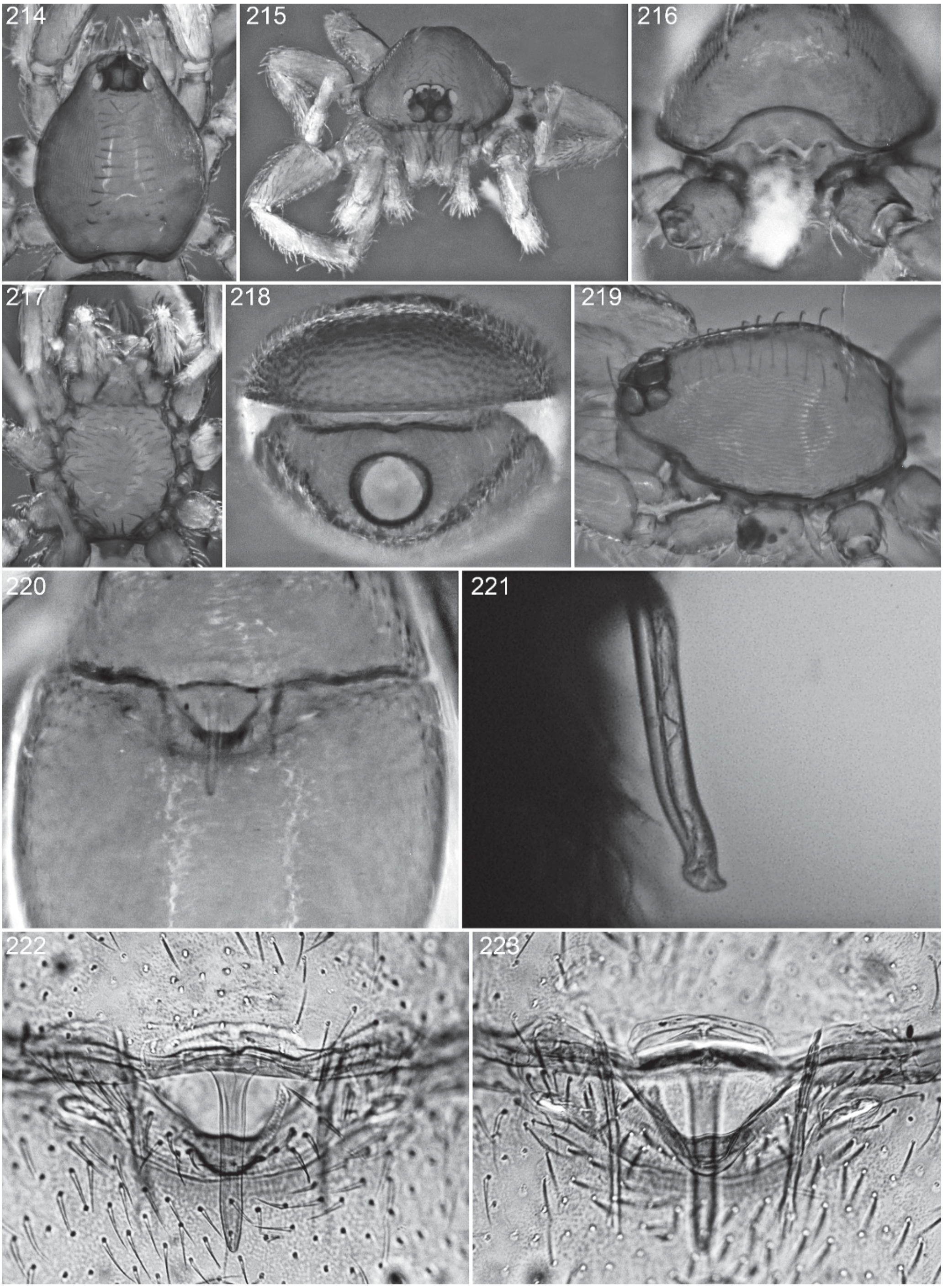
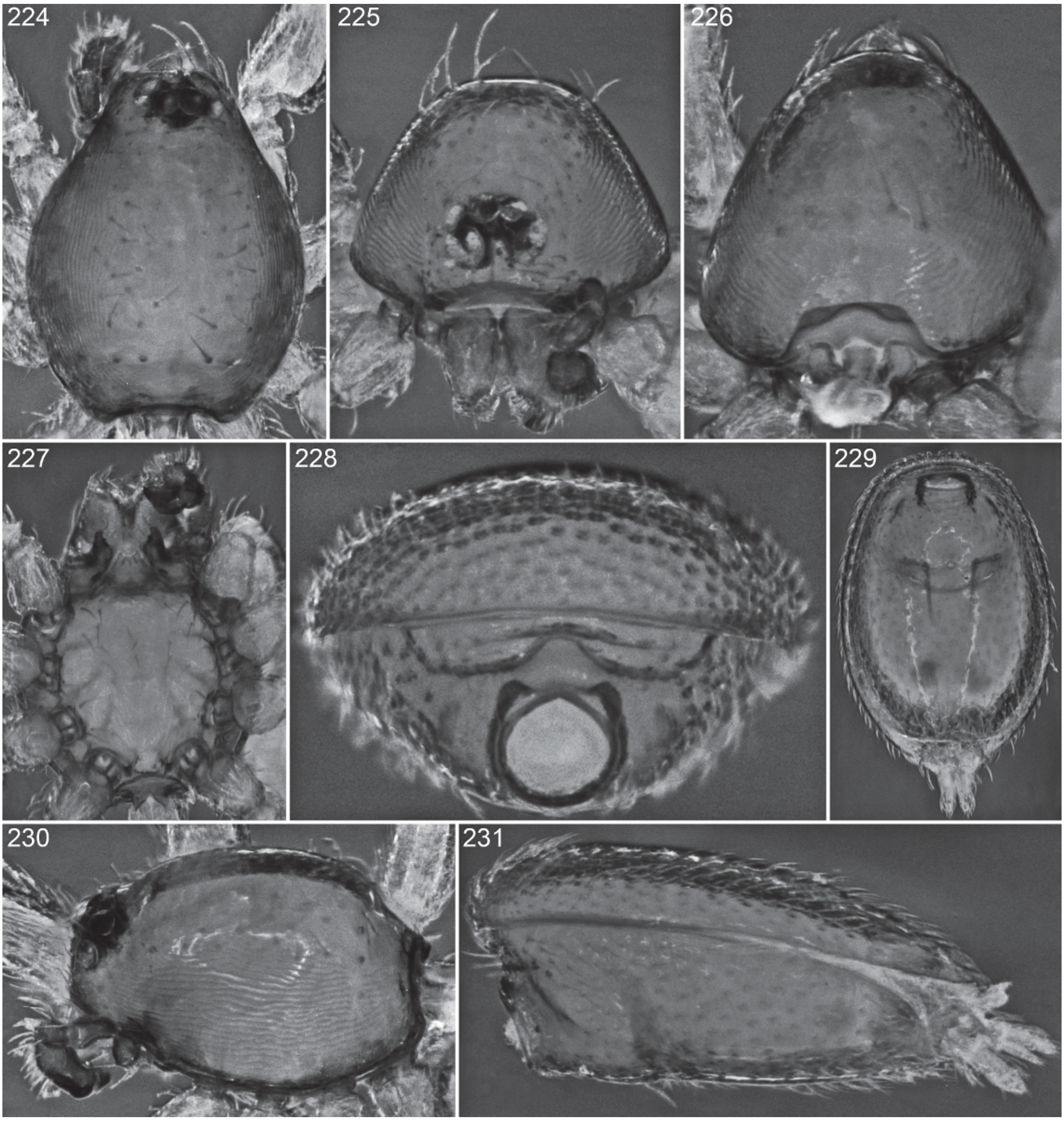
Figs. 206–213. *Brignolia trichinalis* (Benoit), male (206–210) and female (211–213). **206, 211.** Carapace, posterior view. **207, 212.** Posterior margin of carapace, dorsal view. **208, 213.** Abdomen, anterior view. **209.** Labium and endites, ventral view. **210.** Tip of endite, ventral view.



Figs. 214–223. *Brignolia trichinalis* (Benoit), female. **214.** Carapace, dorsal view. **215.** Same, anterior view. **216.** Same, posterior view. **217.** Cephalothorax, ventral view. **218.** Abdomen, anterior view. **219.** Carapace, lateral view. **220.** Epigastric area, ventral view. **221.** Epigastric scape, lateral view. **222.** Genitalia, ventral view. **223.** Same, dorsal view.



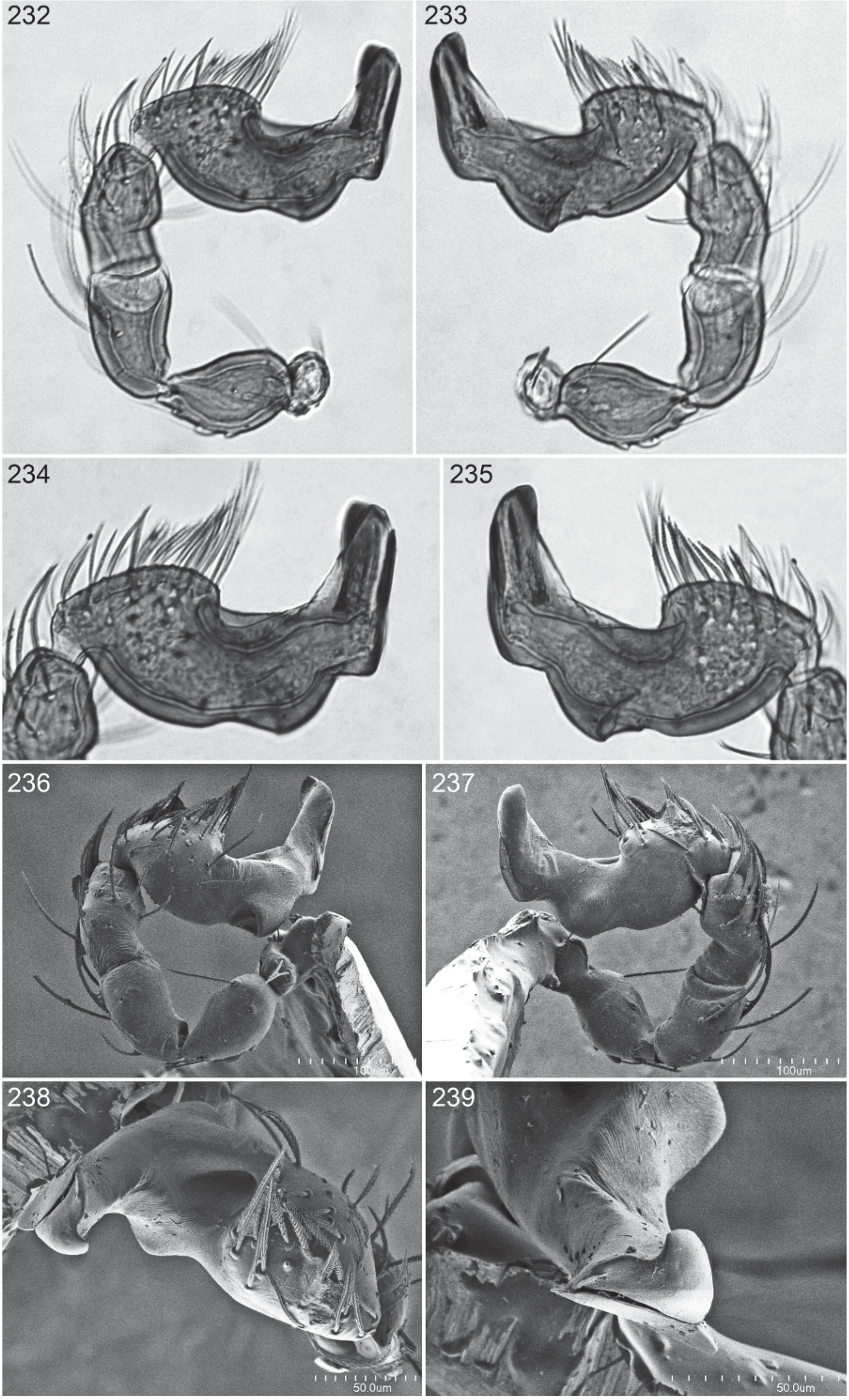
Figs. 224–231. *Brignolia bowleri* (Saaristo), male. **224.** Carapace, dorsal view. **225.** Same, anterior view. **226.** Same, posterior view. **227.** Cephalothorax, ventral view. **228.** Abdomen, anterior view. **229.** Same, ventral view. **230.** Carapace, lateral view. **231.** Abdomen, lateral view.

Lodoicea maldivica rachis litter (MRAC 143.145, PBI_OON 5203), 1♂, 1♀ (allotype, holotype).

DISTRIBUTION: Mauritius and the Seychelle Islands; possibly also Sri Lanka, as two males (MNHN AR14636, PBI_OON 5513) were found mixed among the type series of *B. nigripalis* (Simon).

Brignolia bowleri (Saaristo), new combination
Figures 224–239

Aridella bowleri Saaristo, 2002: 19, figs. 50–54 (male holotype from Aride, Seychelle Islands, in ZMUT; examined).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Figs. 232–239. *Brignolia bowleri* (Saaristo), male. **232, 236.** Left palp, prolateral view. **233, 237.** Same, retrolateral view. **234.** Left palpal bulb, prolateral view. **235.** Same, retrolateral view. **238.** Same, dorsal view. **239.** Same, ventral view.

DIAGNOSIS: Males can easily be recognized by the medially depressed sternum (fig. 227) and the abruptly bent, dorsal directed, scoop-shaped tip of the palpal bulb (figs. 232–239).

MALE (PBI_OON 5398, figs. 224–239): Total length 1.69. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity steep, top margin with two enlarged setae on each side but without distinct tubercles, posterior margin squared, with pair of diamond-shaped thickenings. Sternum without pits, with median concavity occupying most of sternal length. Scuto-pedicel region with deeply W-shaped scutal ridge, strong at midline, followed dorsally by second ridge, without tubercles. Palpal bulb with long, dorsally directed, flattened tip.

FEMALE: Unknown.

MATERIAL EXAMINED: **Seychelle Islands:** *Aride:* no specific locality, July–Nov. 2000, litter (J. Bowler, ZMUT 2130, PBI_OON 5398), 1♂ (holotype).

DISTRIBUTION: Seychelle Islands.

Brignolia nigripalpis (Simon)
Figures 307, 308, 795–821

Gamasomorpha nigripalpis Simon, 1893b: 304 (male lectotype, here designated, presumably from either Kandy or Colombo, Sri Lanka, in MNHN; examined). – Simon, 1893c: 302, fig. 263.

Brignolia nigripalpis: Dumitresco and Georgesco, 1983: 107.

NOTE: Simon (1893b) described both sexes of this species, from two localities in Sri Lanka. Simon typically maintained only one vial per species in his collection; if after describing a species he obtained additional specimens that he regarded as conspecific, he often added them to the original vial. In some cases, he noted the additional localities on the label, but in many cases he did not. It is therefore common for his type vials to contain multiple specimens, from multiple localities, often belonging to multiple species; in the case of *Gamasomorpha nigripalpis*, the type vial (AR5712, PBI_OON 5506) includes specimens of at least five different species, belonging to at least three different genera. In this case, Simon (1905: 168) subsequently identified material (of unspecified sex) from Pondicherry, India, as belonging to *G. nigripalpis*, and that material might have been mixed, by Simon, with the original specimens from Sri Lanka. However, the Simon collection does include a separate vial (MNHN AR5704, PBI_OON 5507), labeled as *G. nigripalis*, containing a single female from Pondicherry, so it is possible that all the specimens in the type vial are actually from Sri Lanka. Simon (1893b, fig. 253) supplied an illustration of the male palp for the species, presumably based on a specimen from Sri Lanka. None of the specimens in the type vial are a good match to that illustration (which is hardly surprising, given the tiny size of these palps). The figure is perhaps closest to two males that belong to *B. trichinalis*, but it shows a longer, distally narrower anterior process on the endite than is found in that species. Only one of the species included among the type series seems to be represented by both sexes, and we here designate a male of that species as the lectotype. Interestingly, the single female supposedly from Pondicherry also belongs to this species, suggesting that this is indeed the species intended by Simon to be *G. nigripalpis*, even if the locality data for either the Sri Lankan or Indian specimens turn out to be erroneous.

DIAGNOSIS: This species seems closest to *B. rothorum*, sharing with it a distinctive triangular projection on the base of the male palpal bulb (figs. 316, 806). Males can be distinguished by having the tip of the palpal bulb directed dorsally (figs. 803, 804), females by the wide sclerotization in the middle of the postepigastric region (figs. 820, 821).

MALE (PBI_OON 5506, figs. 307, 308, 795–811): Total length 1.76. Carapace orange, with dark brown egg-shaped patches behind eyes; pars cephalica slightly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity without distinct shoulders, top margin with two enlarged setae with enlarged bases on each side, posterior margin rounded, with pair of slight darkenings opposite pits. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge almost straight, with slight tubercles. Palpal bulb elongated, middle part with recurved dorsal lobe, with blunt, dorsally directed tip.

FEMALE (PBI_OON 5506, figs. 812–821): Total length 1.98. Epigynal area with short, anteriorly directed, triangular projection originating near posterior spiracular groove, followed anteriorly by wide sclerotization situated about halfway between epigastric groove and posterior spiracular groove (figs. 820, 821).

MATERIAL EXAMINED: **Sri Lanka:** locality uncertain, presumably either Kandy or Colombo (MNHN AR5712, PBI_OON 5506), 4♂ (including lectotype), 1♀. **India:** *Puducherry:* Pondicherry (MNHN AR5704, PBI_OON 5507), 1♀.

DISTRIBUTION: Sri Lanka and southern India (if all the locality data from the Simon collection are correct).

Brignolia ambigua (Simon), new combination

Figures 822–837

Opopaea ambigua Simon, 1893b: 302 (male lectotype, here designated, from Galle, Sri Lanka, in MNHN; examined).

NOTE: Simon described both sexes of this species, but the female currently with the male here selected as the lectotype is clearly not conspecific with that male. It has a higher posterior carapace margin than does the male, anterolateral projections on the pedicel that are lacking in the male, and a deeply W-shaped anterior scutal ridge on the abdomen. We suspect that, unlike the male, the female does actually belong to *Opopaea*.

DIAGNOSIS: Males can easily be recognized by the distally expanded, blunt-tipped palpal bulb (figs. 830–837).

MALE (PBI_OON 556, figs. 822–837): Total length 1.17. Coloration uncertain (lectotype badly faded). Carapace with traces of dark brown egg-shaped patches behind eyes; pars cephalica slightly elevated in lateral view; posterolateral edge without obvious pits, posterior declivity without distinct shoulders, top margin apparently without enlarged setae or enlarged setal bases, posterior margin rounded, low, without apparent darkenings. Sternum without distinct pits. Scuto-pedicel region with scarcely detectable, straight scutal ridge, without apparent tubercles. Palpal bulb short, distally thickened, with blunt tip.

FEMALE: Unknown.

MATERIAL EXAMINED: Only the male lectotype (MNHN AR14180, PBI_OON 556).

DISTRIBUTION: Sri Lanka.

Brignolia sinharaja, new species

Figures 240–268

TYPES: Male holotype and female allotype from the Sinharaja Forest Reserve, Ratnapura, Sri Lanka (Aug. 23, 1981), deposited in NML (PBI_OON 31759).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

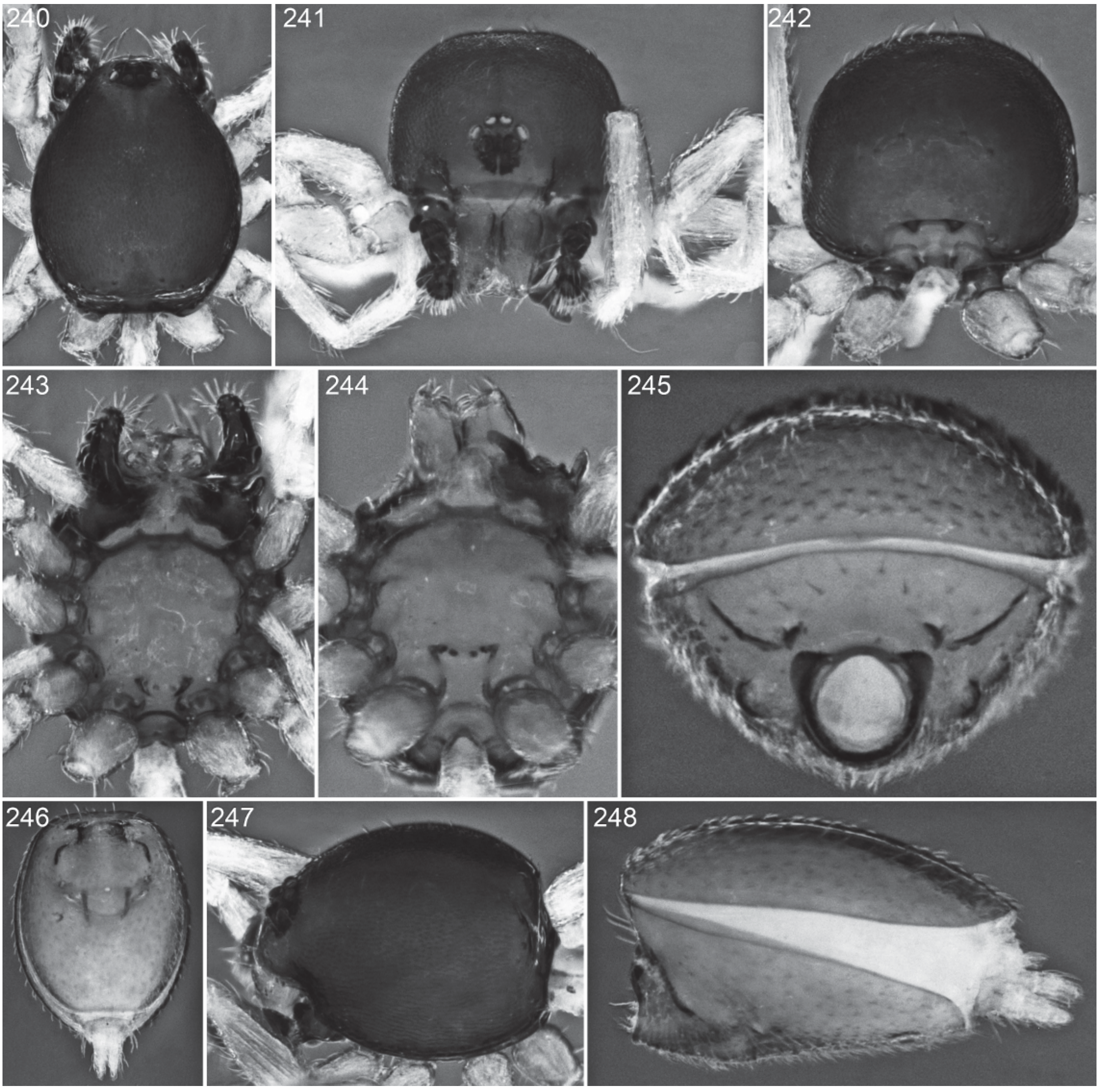
DIAGNOSIS: Males resemble those of *B. bowleri* in having the sternum medially depressed, but have the depression largely confined to the posterior half of the sternum (figs. 243, 244); they are easily recognized by the unusually long endite tip and the presence of a second, long process on the lateral edge of the endite (figs. 243, 244, 255, 256). Females have a distinctive, broadly triangular process that fills most of the space between the epigastric furrow and the posterior spiracular groove (figs. 267, 268).

MALE (PBI_OON 31759, figs. 240–258): Total length 1.49. Carapace brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity steep, top margin with three enlarged setae with enlarged bases on each side, posterior margin squared, with pair of dark triangular sclerotizations. Sternum without pits, with median concavity occupying most of sternal length, posterior ridge produced, bearing three large tubercles on each side. Scuto-pedicel region with deeply W-shaped scutal ridge, extremely weak medially but with one enlarged tubercle opposite each pedicel triangle. Palpal bulb with dorsally directed, flattened tip, tip shorter than in *B. bowleri*.

FEMALE (PBI_OON 31759, figs. 259–268): Total length 1.37. Posterior sternal ridge less pronounced than in male, bearing only small tubercles. Posterior epigastric area with elaborate sclerotizations; posterior tube long, narrow.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Sri Lanka.



Figs. 240–248. *Brignolia sinharaja*, new species, male. **240.** Carapace, dorsal view. **241.** Same, anterior view. **242.** Same, posterior view. **243.** Cephalothorax, ventral view. **244.** Same, oblique posterior view. **245.** Abdomen, anterior view. **246.** Same, ventral view. **247.** Carapace, lateral view. **248.** Abdomen, lateral view.

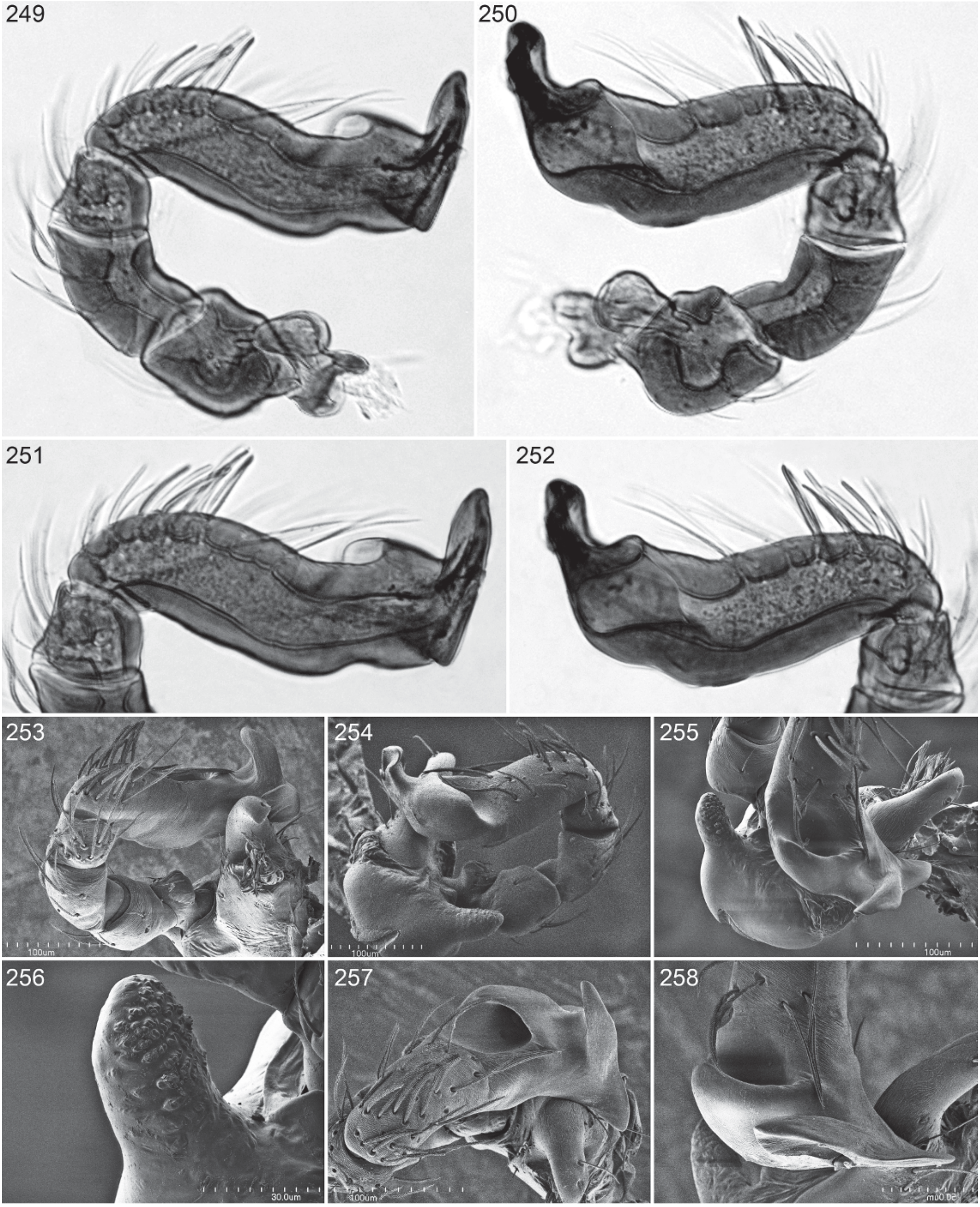
Brignolia ratnapura, new species
Figures 269–294

TYPES: Male holotype and female allotype from the Sinharaja Forest Reserve, Ratnapura, Sri Lanka (Aug. 23, 1981), deposited in NML (PBI_OON 514).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Although taken sympatrically with *B. sinharaja*, this species is much more closely related to *B. parumpunctata*. Males share with that species a rounded dorsal protrusion on the palpal bulb, but have the protrusion less coiled as well as a longer, narrower tip on the bulb (figs. 277–280). Females share with that species a twisted posterior duct (fig. 294), but lack an external epigastric protrusion (fig. 293).

MALE (PBI_OON 514, figs. 269–284): Total length 1.28. Carapace pale orange, without any pattern; pars cephalica strongly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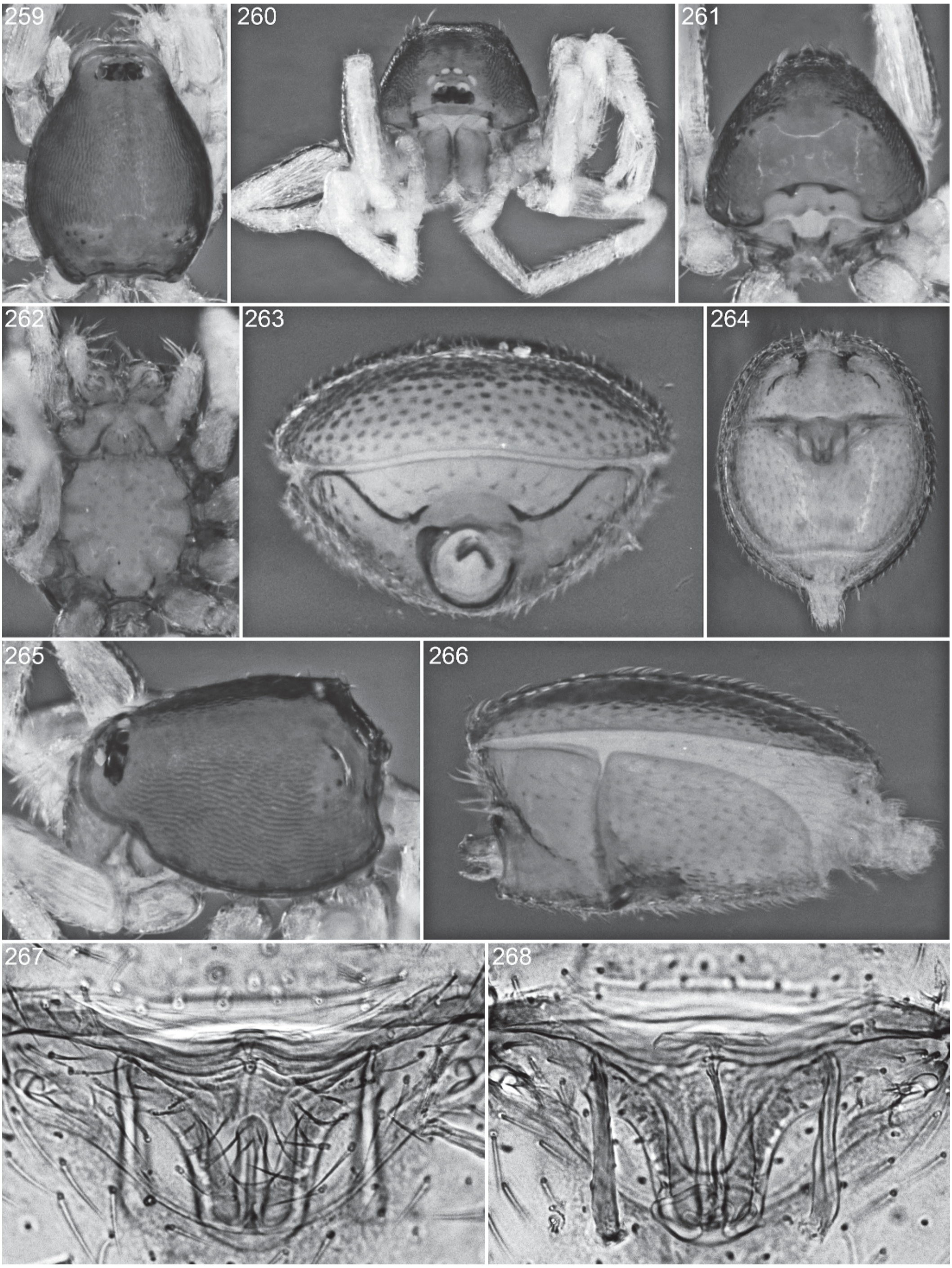
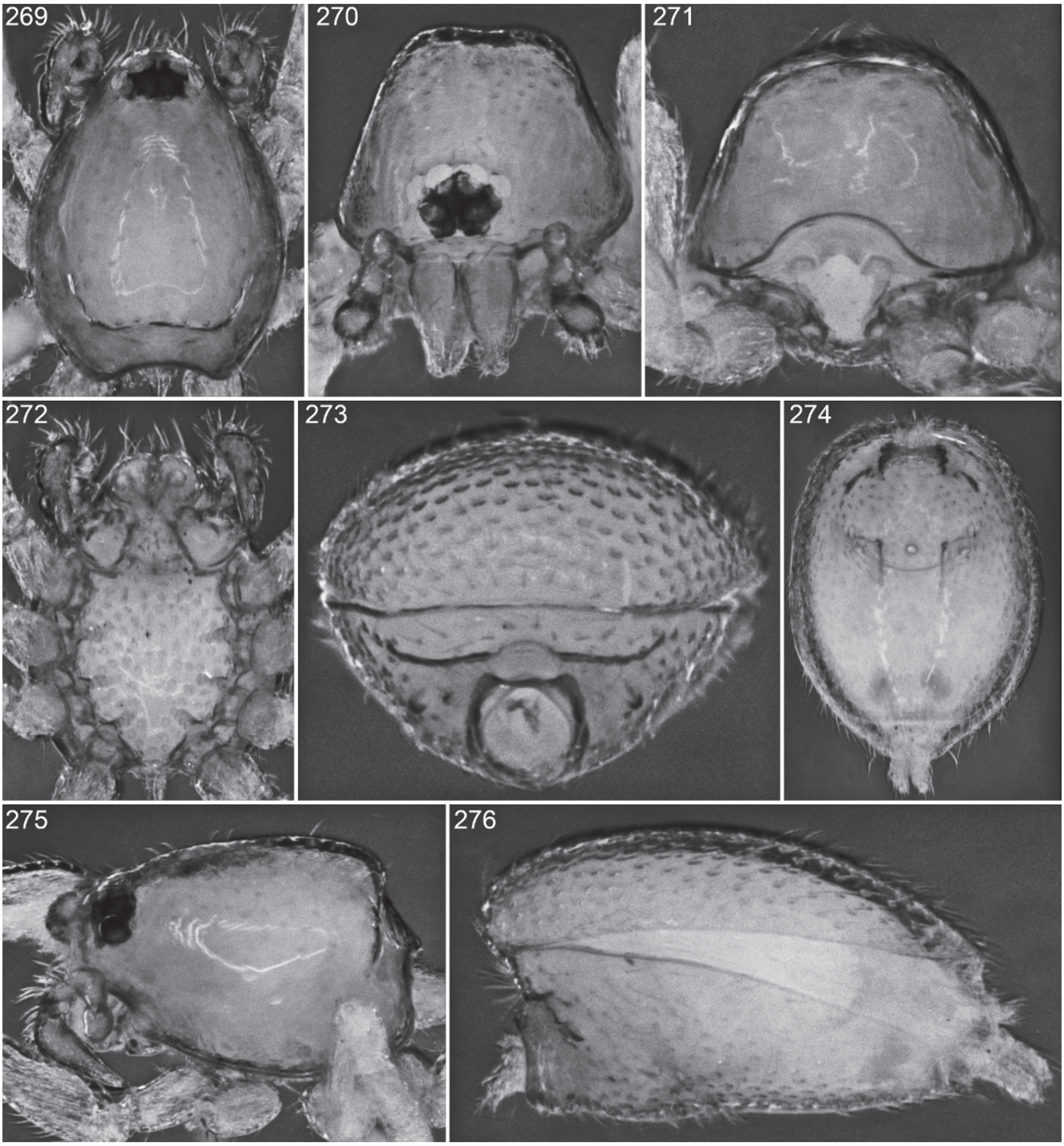
Figs. 249–258. *Brignolia sinharaja*, new species, male. **249, 253.** Left palp, prolateral view. **250, 254.** Same, retrolateral view. **251.** Left palpal bulb, prolateral view. **252.** Same, retrolateral view. **255.** Endite, oblique lateral view. **256.** Lateral process on endite, same. **257.** Left palpal bulb, dorsal view. **258.** Same, ventral view.



Figs. 259–268. *Brignolia sinharaja*, new species, female. **259.** Carapace, dorsal view. **260.** Same, anterior view. **261.** Same, posterior view. **262.** Cephalothorax, ventral view. **263.** Abdomen, anterior view. **264.** Same, ventral view. **265.** Carapace, lateral view. **266.** Abdomen, lateral view. **267.** Genitalia, ventral view. **268.** Same, dorsal view.



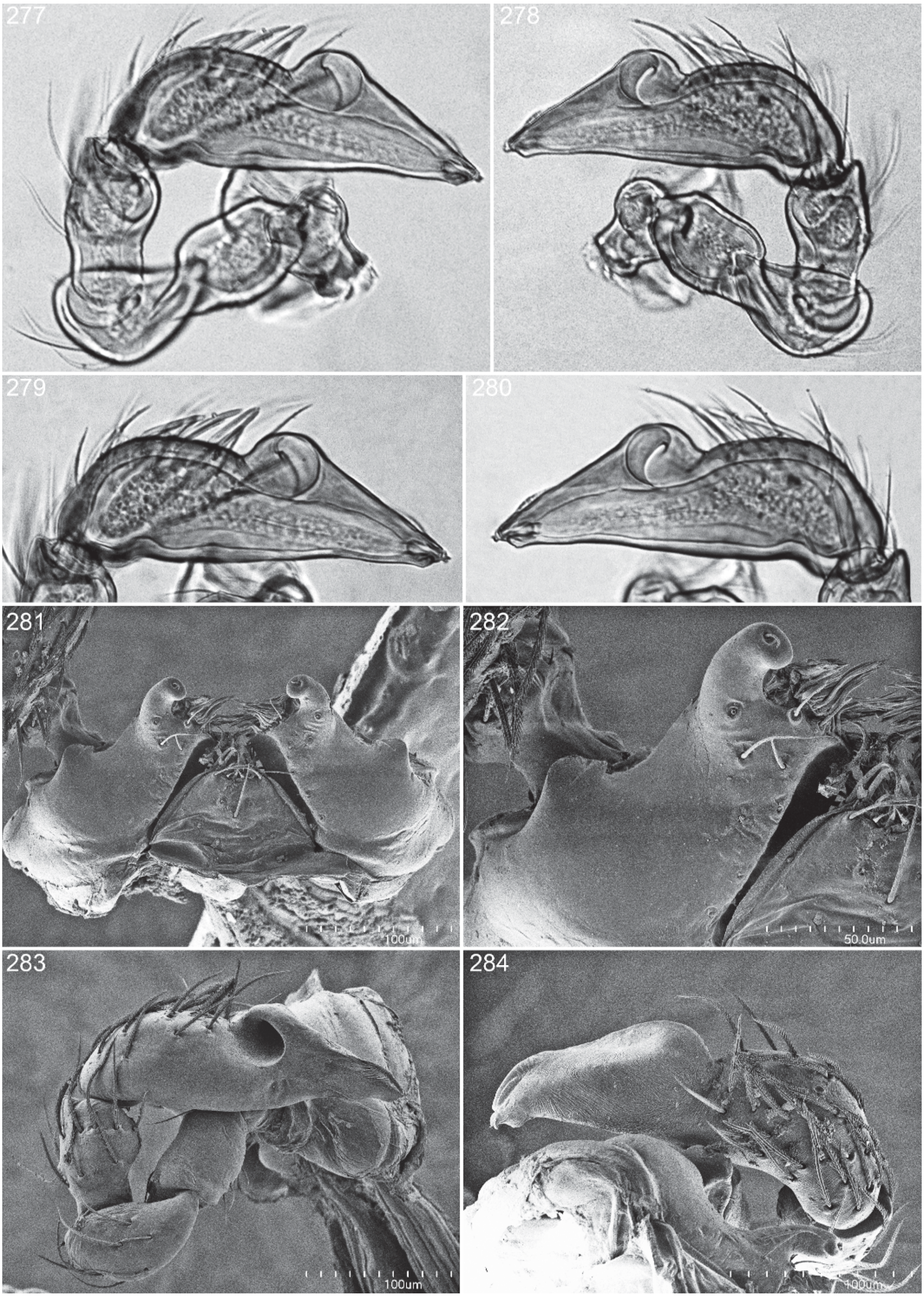
Figs. 269–276. *Brignolia ratnapura*, new species, male. **269.** Carapace, dorsal view. **270.** Same, anterior view. **271.** Same, posterior view. **272.** Cephalothorax, ventral view. **273.** Abdomen, anterior view. **274.** Same, ventral view. **275.** Carapace, lateral view. **276.** Abdomen, lateral view.

elevated in lateral view; posterolateral edge without pits, posterior declivity steep, top margin with three enlarged setae with enlarged bases on each side, posterior margin rounded. Sternum covered with small round pits. Scuto-pedicel region with deeply W-shaped scutal ridge, thinner at middle but still distinct, without tubercles. Palpal bulb tapering apically, middle part with rounded dorsal process.

FEMALE (PBI_OON 514, figs. 285–294): Total length 1.32. Posterior genitalic tube convoluted, thicker anteriorly than posteriorly.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Sri Lanka.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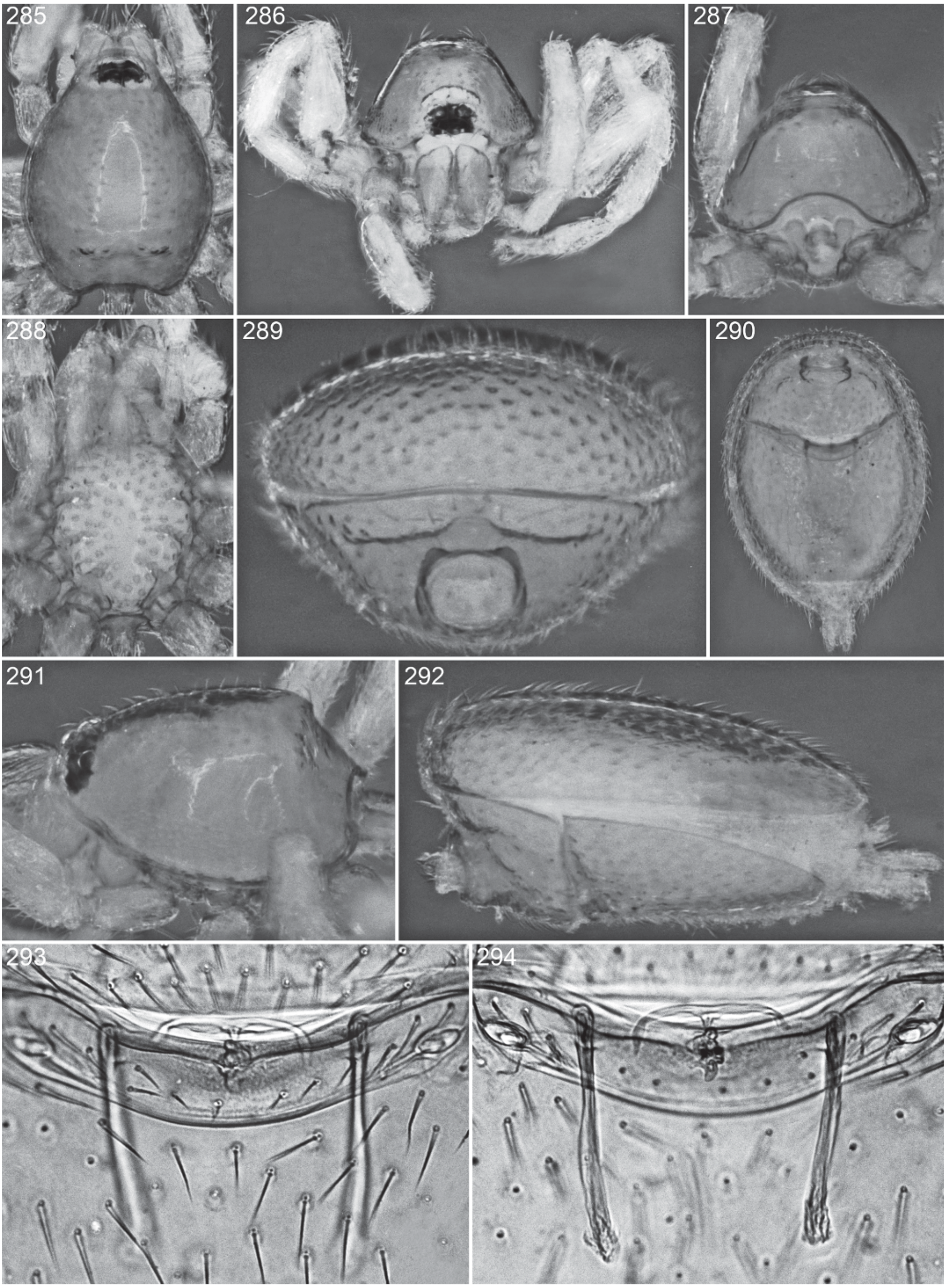
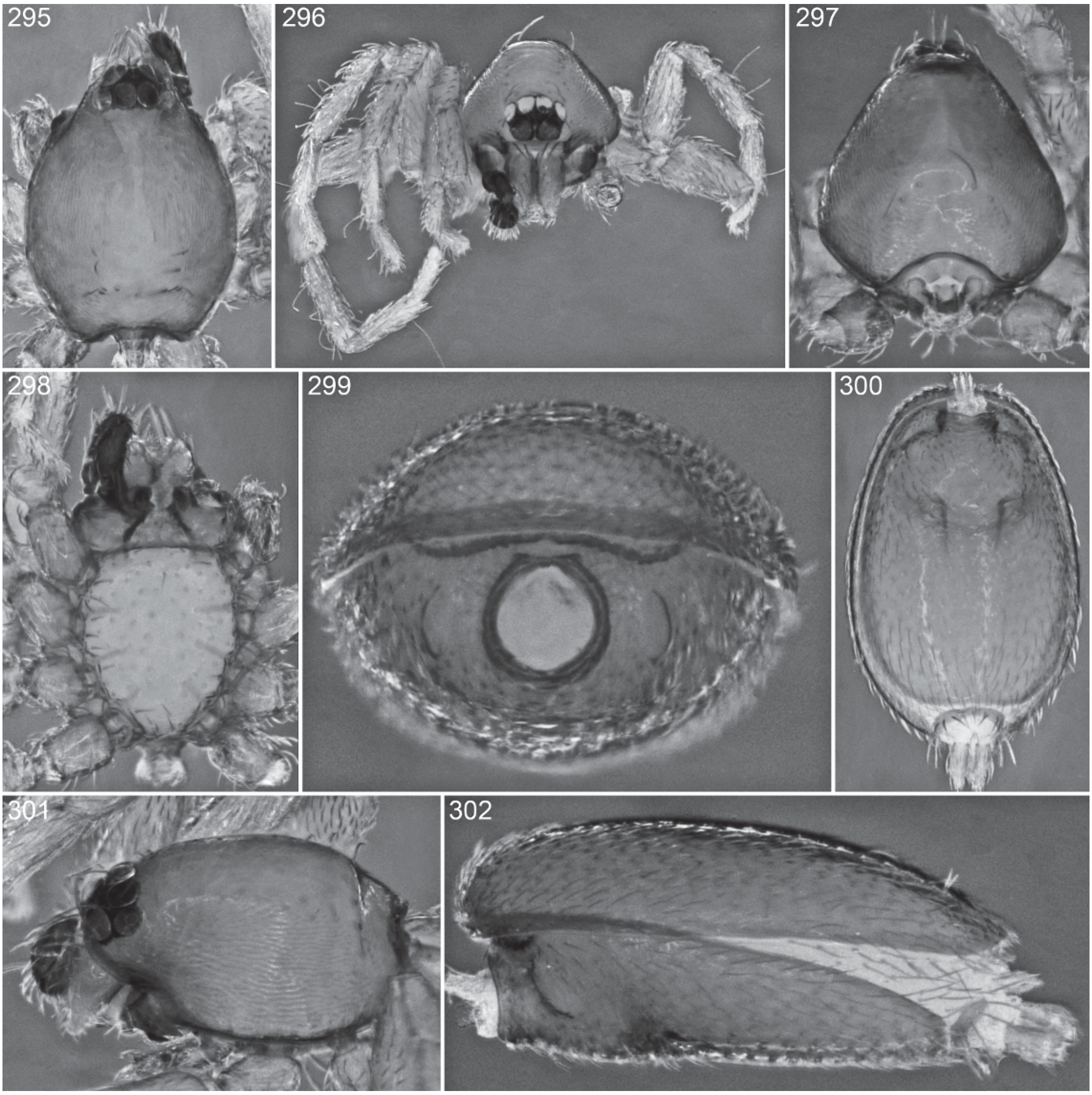
Figs. 277–284. *Brignolia ratnapura*, new species, male. **277, 283.** Left palp, prolateral view. **278, 284.** Same, retrolateral view. **279.** Left palpal bulb, prolateral view. **280.** Same, retrolateral view. **281.** Labium and endites, ventral view. **282.** Tip of endite, ventral view.



Figs. 285–294. *Brignolia ratnapura*, new species, female. **285.** Carapace, dorsal view. **286.** Same, anterior view. **287.** Same, posterior view. **288.** Cephalothorax, ventral view. **289.** Abdomen, anterior view. **290.** Same, ventral view. **291.** Carapace, lateral view. **292.** Abdomen, lateral view. **293.** Genitalia, ventral view. **294.** Same, dorsal view.



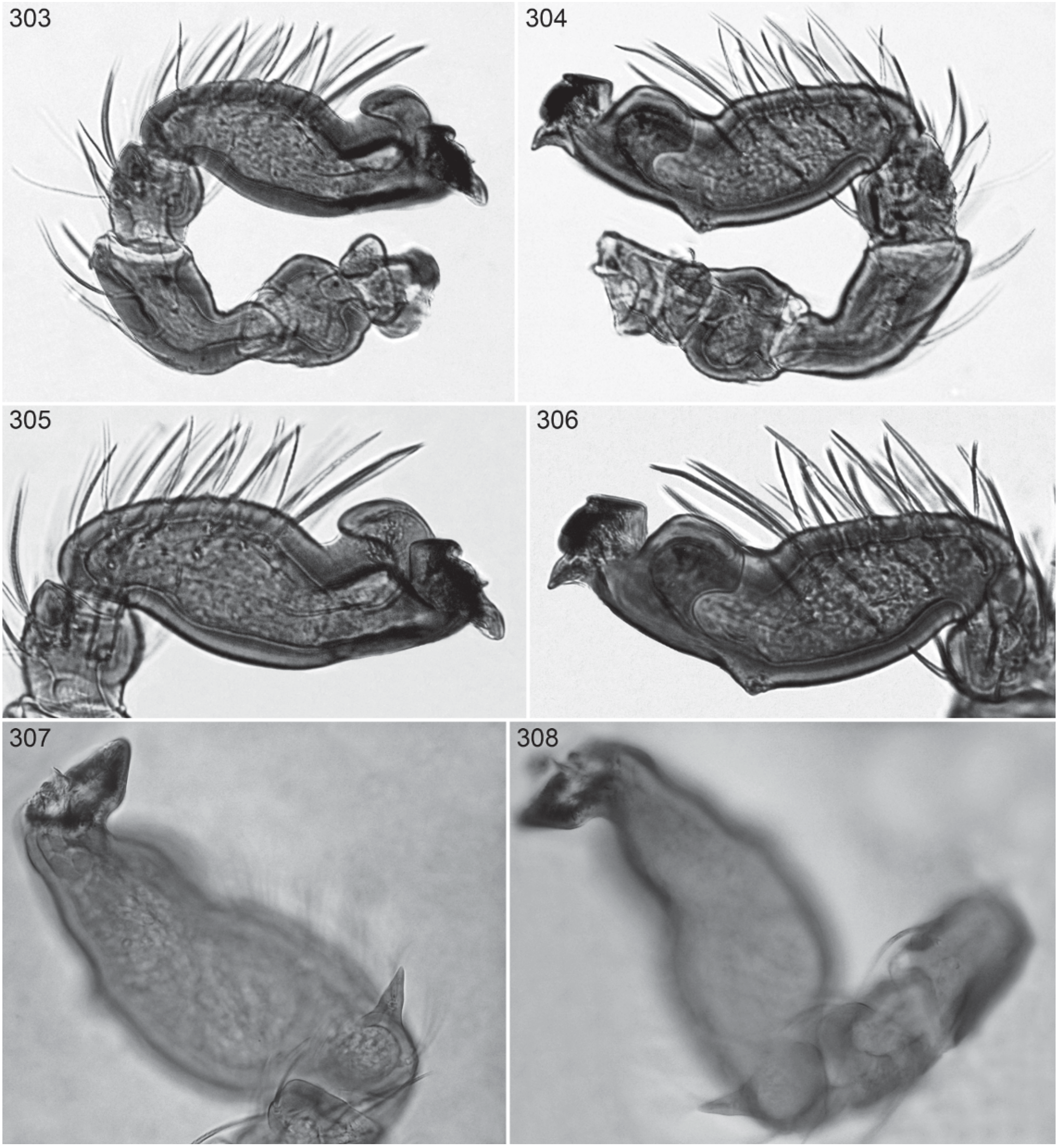
Figs. 295–302. *Brignolia rothorum*, new species, male. **295.** Carapace, dorsal view. **296.** Same, anterior view. **297.** Same, posterior view. **298.** Cephalothorax, ventral view. **299.** Abdomen, anterior view. **300.** Same, ventral view. **301.** Carapace, lateral view. **302.** Abdomen, lateral view.

Brignolia rothorum, new species
Figures 295–306, 309–332

TYPES: Male holotype and female allotype taken at an elevation of 7000 ft at Kodaikanal, 10°15′N, 77°31′E, Tamil Nadu, India (Dec. 30, 1989;V., B. Roth), deposited in CAS (38432, PBI_OON 2450).

ETYMOLOGY: The specific name is a patronym in honor of the collectors of the type specimens.

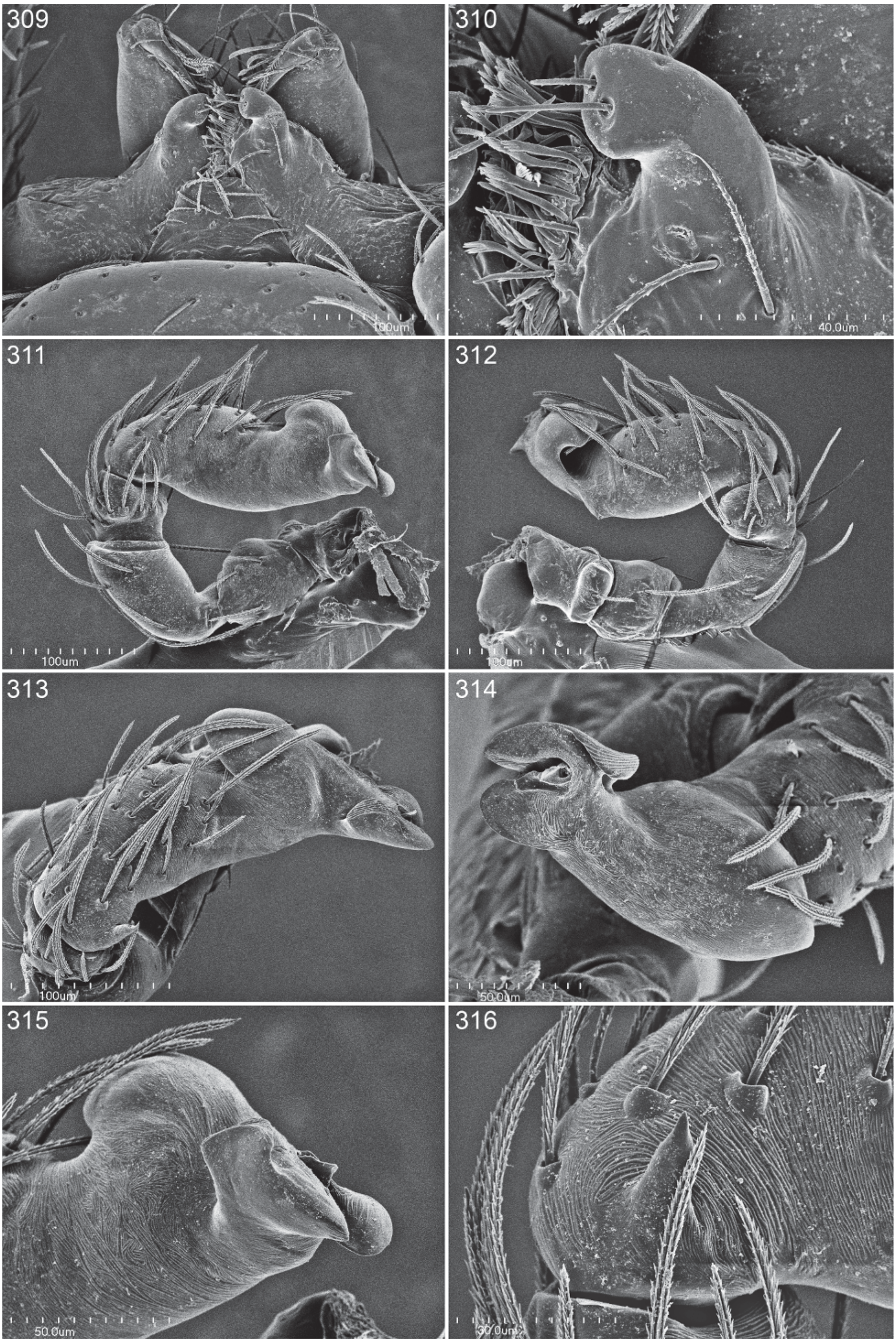
DIAGNOSIS: Males resemble those of *B. nigripalpis* in having a proximally situated spur on the prolateral surface of the palpal cymbium (figs. 311, 316), but have the tip of the palpal bulb directed ventrally rather than dorsally; females can easily be recognized by the conformation of the epigastric region, which has a beaklike, posteriorly directed protrusion from the posterior margin of the epigastric furrow that almost meets an



Figs. 303–308. 303–306. *Brignolia rothorum*, new species, male. **303.** Left palp, prolateral view. **304.** Same, retrolateral view. **305.** Left palpal bulb, prolateral view. **306.** Same, retrolateral view. 307, 308. *B. nigripalpis* (Simon), male, left palpal bulb. **307.** Cymbial spur, prolateral view. **308.** Same, ventral view.

anteriorly directed, triangular posterior protrusion (figs. 328, 331, 332).

MALE (PBI_OON 2450, figs. 295–306, 309–319): Total length 1.82. Carapace orange-brown, without any pattern; pars cephalica slightly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity without distinct shoulders, top margin with two enlarged setae with enlarged bases on each side, posterior margin rounded, with pair of slight darkenings opposite pits. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge almost straight, with slight tubercles.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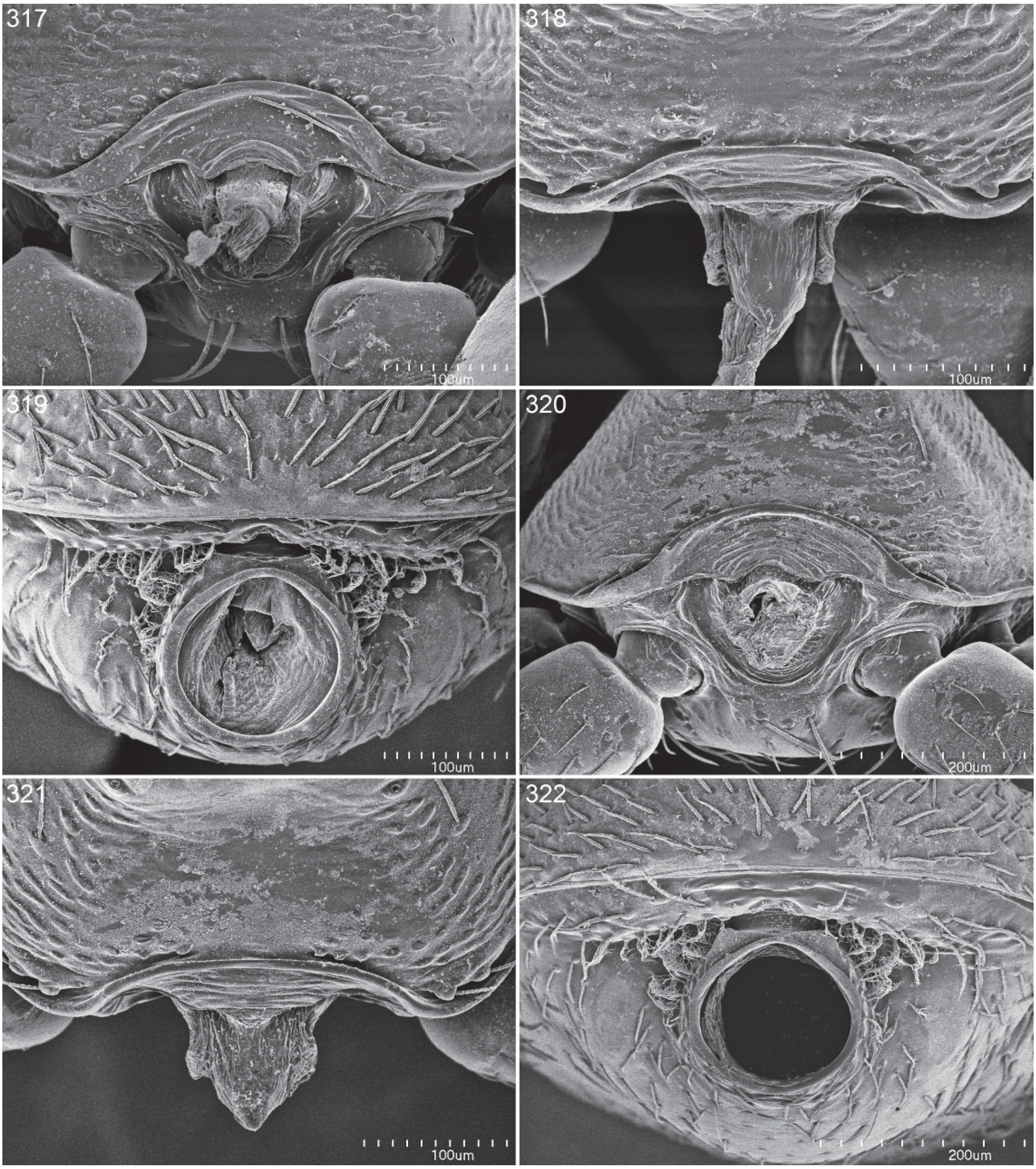
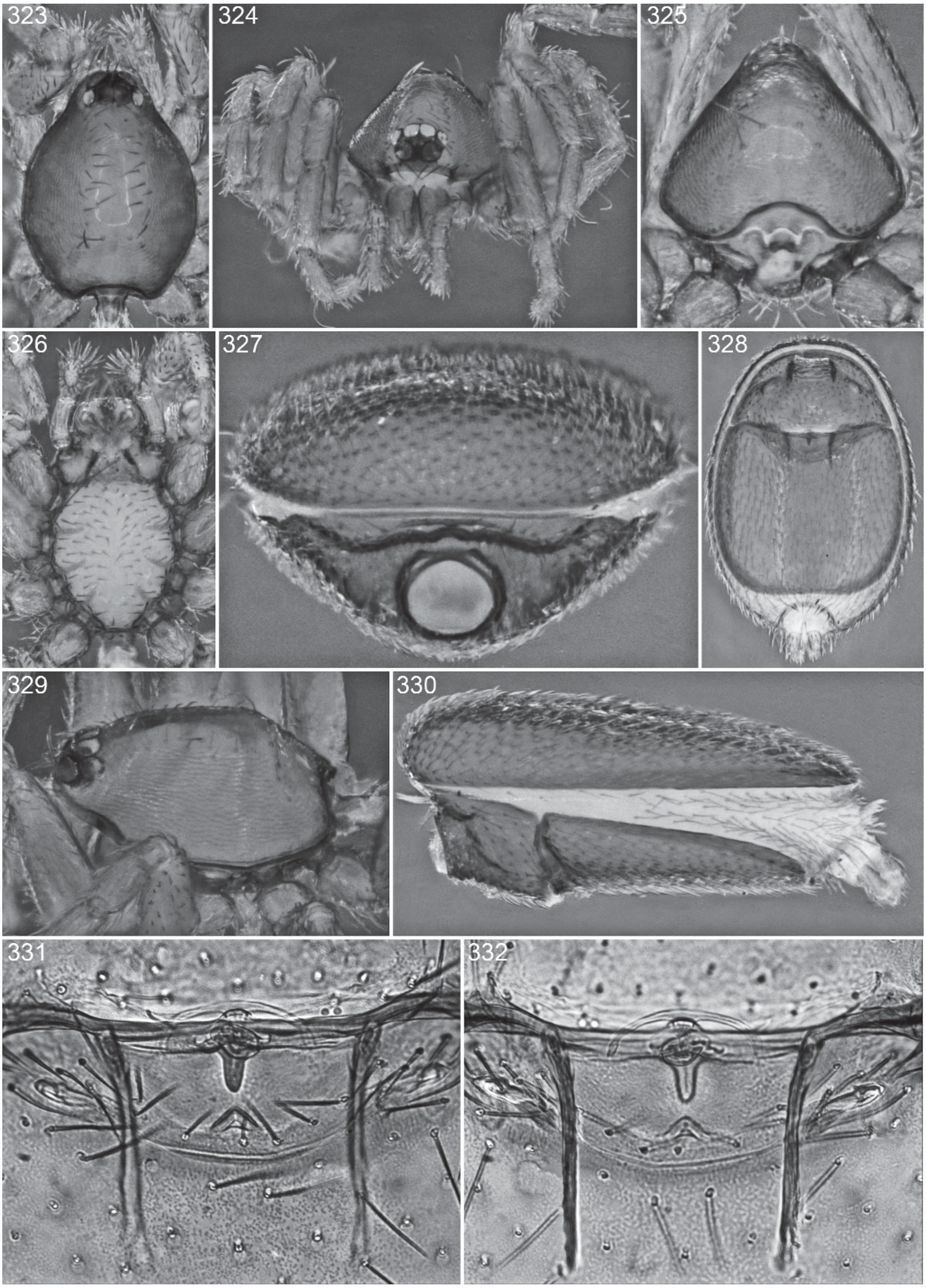
Figs. 309–316. *Brignolia rothorum*, new species, male. **309.** Labium and endites, ventral view. **310.** Tip of endite, ventral view. **311.** Left palp, prolateral view. **312.** Same, retrolateral view. **313.** Left palpal bulb, dorsal view. **314.** Same, ventral view. **315.** Embolus, prolateral view. **316.** Cymbial spur, prolateral view.



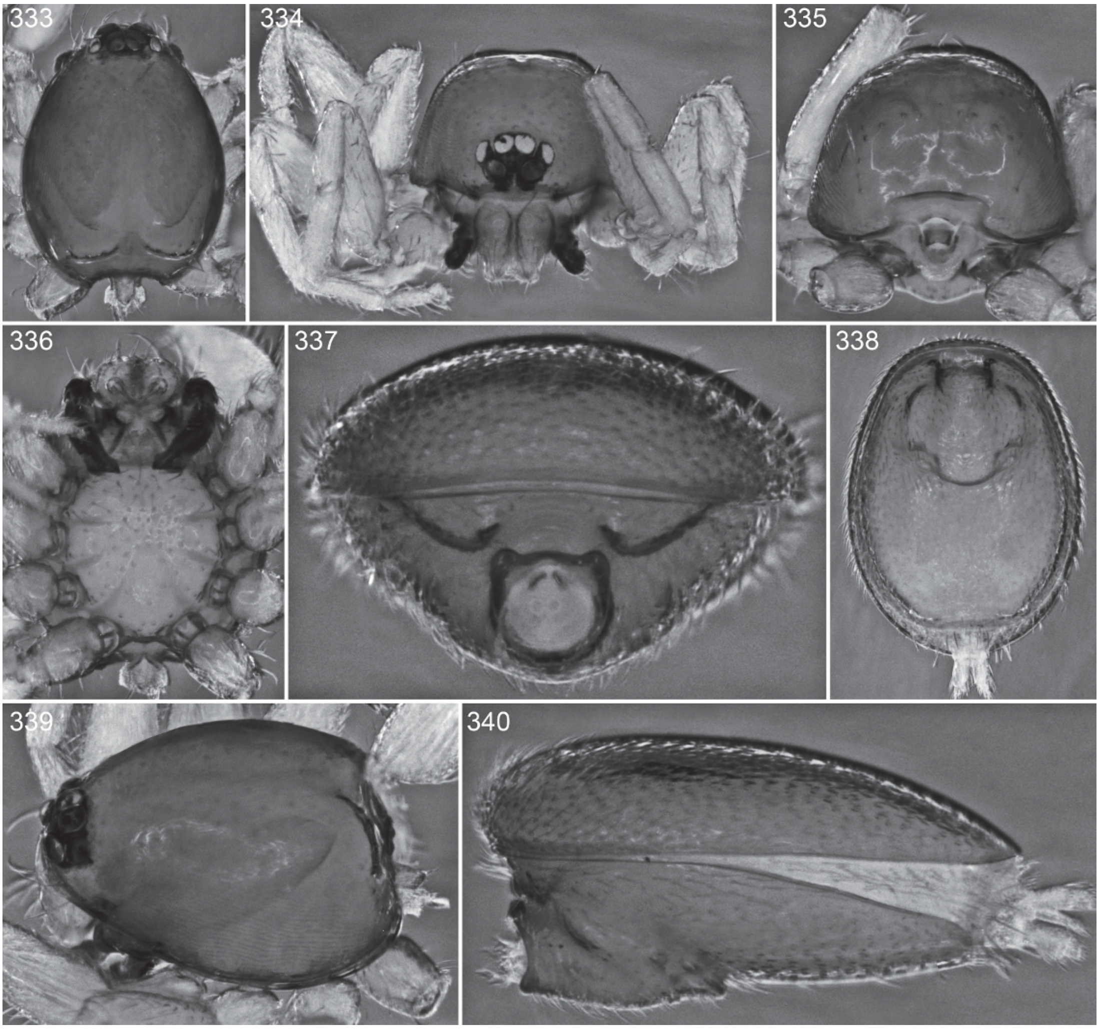
Figs. 317–322. *Brignolia rothorum*, new species, male (317–319) and female (320–322). **317, 320.** Carapace, posterior view. **318, 321.** Posterior margin of carapace, dorsal view. **319, 322.** Abdomen, anterior view.

Palpal bulb elongated, middle part with recurved dorsal lobe, with blunt, ventrally directed tip.

FEMALE (PBI_OON 2450, figs. 320–332): Total length 1.97. Epigynal area with relatively long, narrow, posteriorly directed scapelike projection originating near posterior margin of epigastric furrow, and relatively short, wide, anteriorly directed projection originating at middle of W-shaped transverse ridge situated near posterior spiracular groove; posterior tube curled.



Figs. 323–332. *Brignolia rothorum*, new species, female. **323.** Carapace, dorsal view. **324.** Same, anterior view. **325.** Same, posterior view. **326.** Cephalothorax, ventral view. **327.** Abdomen, anterior view. **328.** Same, ventral view. **329.** Carapace, lateral view. **330.** Abdomen, lateral view. **331.** Genitalia, ventral view. **332.** Same, dorsal view.



Figs. 333–340. *Brignolia cardamom*, new species, male. **333.** Carapace, dorsal view. **334.** Same, anterior view. **335.** Same, posterior view. **336.** Cephalothorax, ventral view. **337.** Abdomen, anterior view. **338.** Same, ventral view. **339.** Carapace, lateral view. **340.** Abdomen, lateral view.

OTHER MATERIAL EXAMINED: **India:** *Tamil Nadu:* Kodaikanal, 10°15′N, 77°31′E, Dec. 30, 1989, elev. 7000 ft (V., B. Roth, CAS 38432, PBI_OON 2450, 3♂, 10♀; below Kodaikanal, 10°15′N, 77°31′E, Dec. 31, 1989 (V., B. Roth, CAS 38475, PBI_OON 2449), 1♂, 2♀.

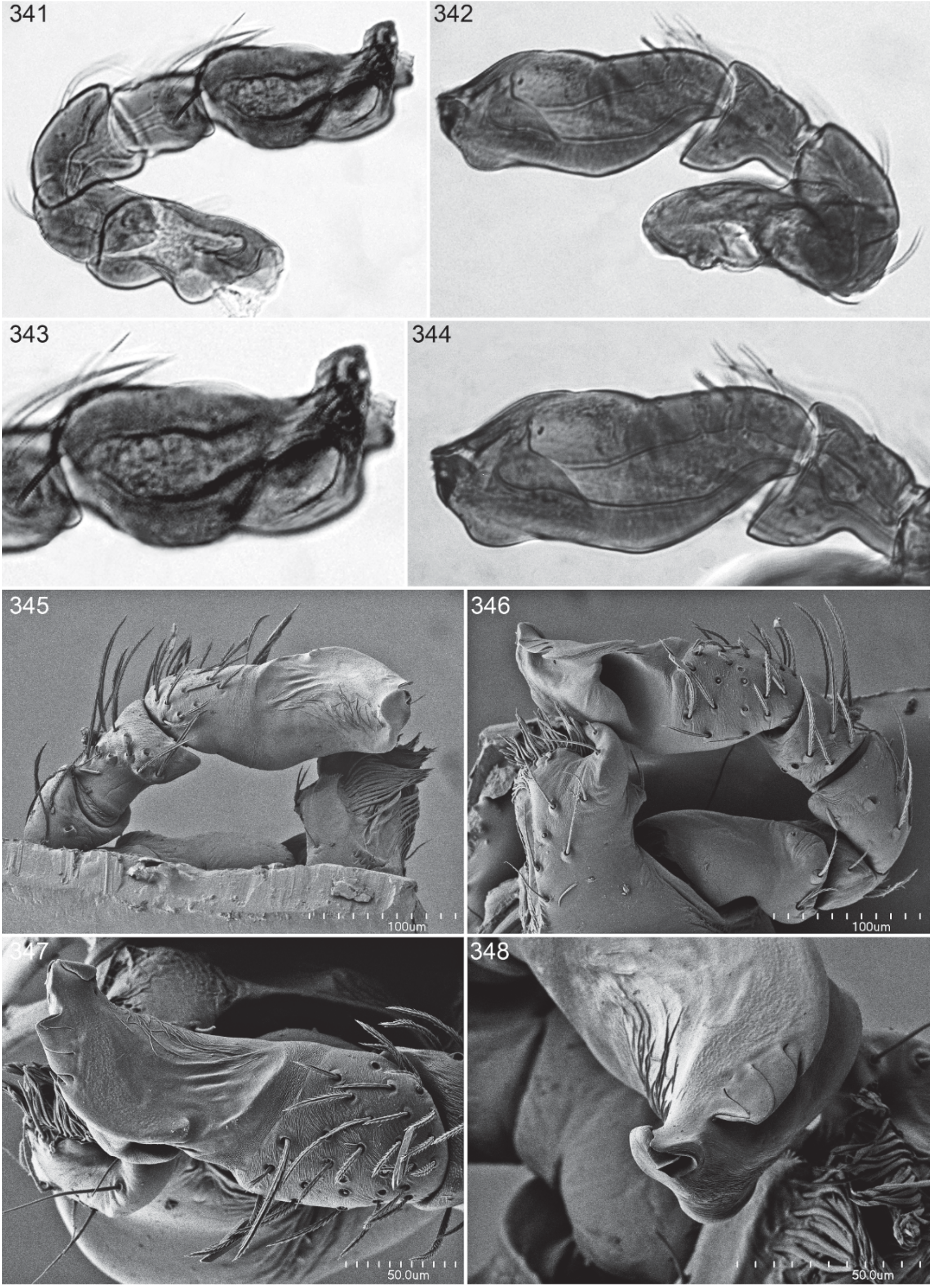
DISTRIBUTION: Tamil Nadu, India.

Brignolia cardamom, new species
Figures 333–366

TYPES: Male holotype and female allotype taken by sifting in forest near river at an elevation of 950 m in the Cardamom Hills, between Pambanar and Peermade, Kerala, India (Nov. 9, 1972; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 12320, 12565).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can be recognized by the relatively short, dorsally excavated, and distally blunt palpal bulb (figs. 341–348), females by the very large, anteriorly directed triangular protrusion extending anteriorly from the posterior spiracular groove (figs. 362, 365, 366).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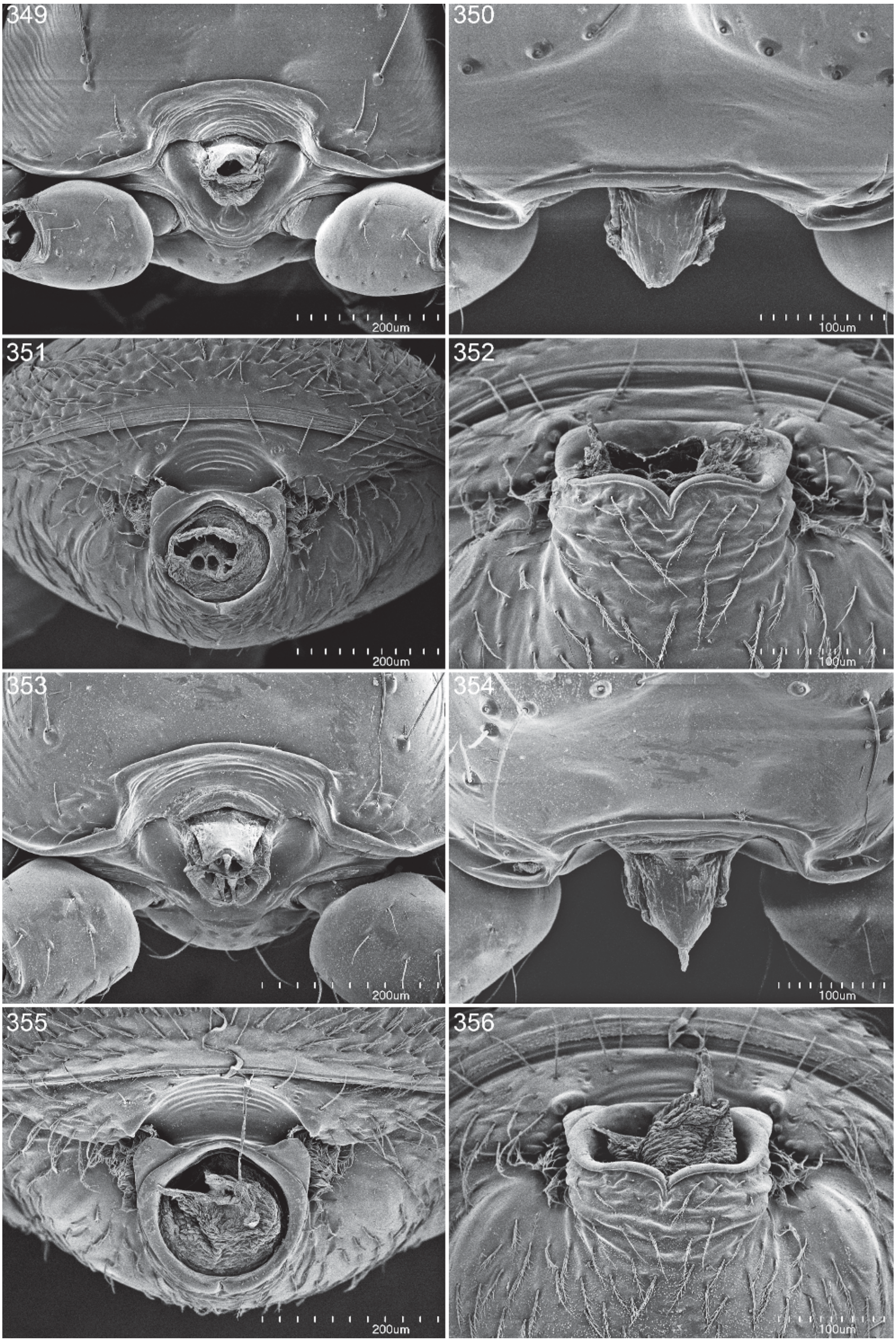
Figs. 341–348. *Brignolia cardamom*, new species, male. **341, 345.** Left palp, prolateral view. **342, 346.** Same, retrolateral view. **343.** Left palpal bulb, prolateral view. **344.** Same, retrolateral view. **347.** Same, dorsal view. **348.** Same, ventral view.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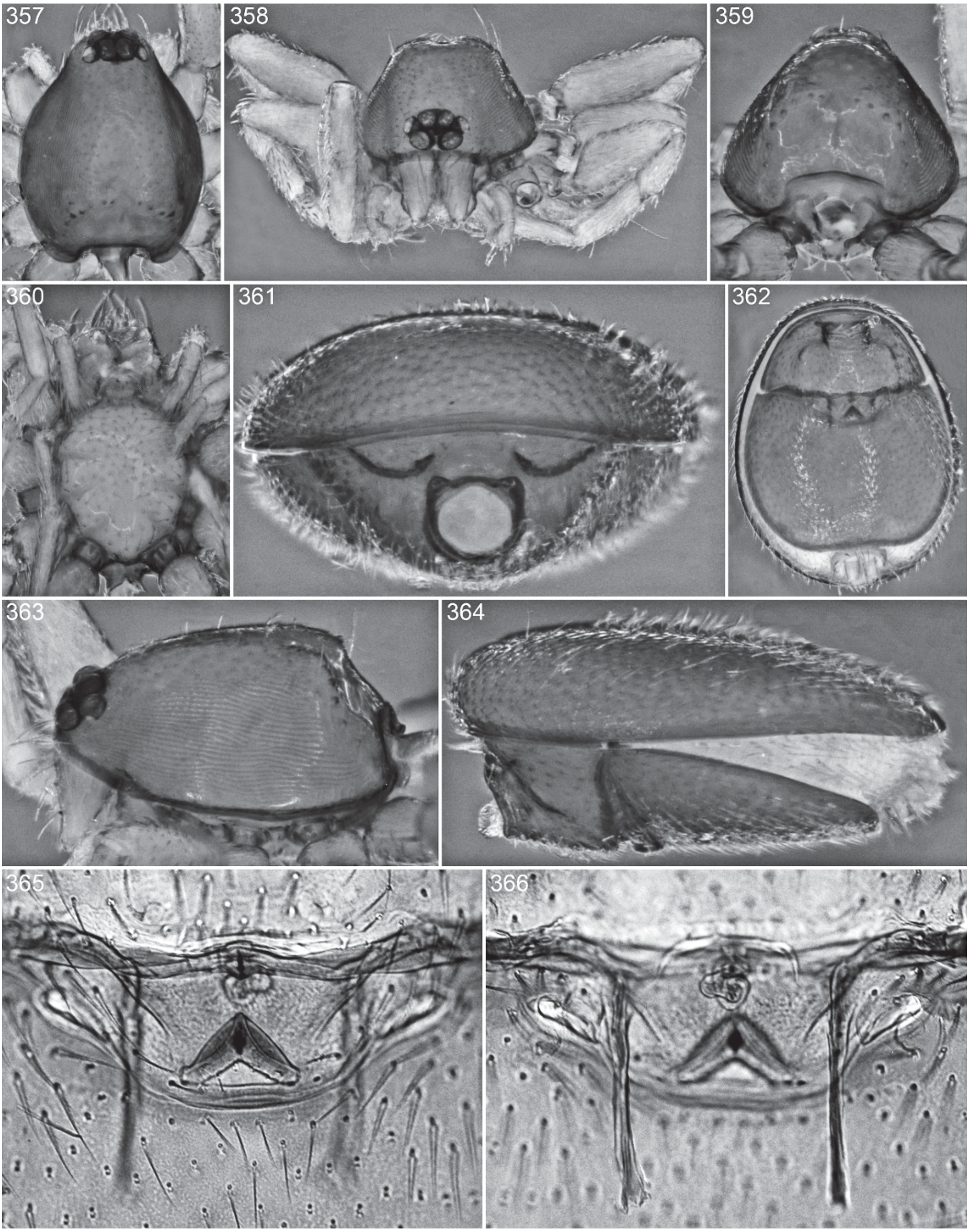
Figs. 349–356. *Brignolia cardamom*, new species, male (349–352) and female (353–356). **349, 353.** Carapace, posterior view. **350, 354.** Posterior margin of carapace, dorsal view. **351, 355.** Abdomen, anterior view. **352, 356.** Pedicel tube, ventral view.



Figs. 357–366. *Brignolia cardamom*, new species, female. **357.** Carapace, dorsal view. **358.** Same, anterior view. **359.** Same, posterior view. **360.** Cephalothorax, ventral view. **361.** Abdomen, anterior view. **362.** Same, ventral view. **363.** Carapace, lateral view. **364.** Abdomen, lateral view. **365.** Genitalia, ventral view. **366.** Same, dorsal view.

MALE (PBI_OON 12510, figs. 333–352): Total length 1.98. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity steep, with distinct shoulders, posterior margin squared. Sternum covered with small round pits. Scuto-pedicel region with deeply W-shaped scutal ridge, so weak at middle as to resemble two V-shaped ridges but with row of tubercles opposite pedicel triangles, singlemost anterior tubercle enlarged. Palpal bulb dorsally excavated, with broad tip.

FEMALE (PBI_OON 12816, figs. 353–366): Total length 2.02. Postepigastric area with wide, anteriorly directed triangular projection originating near posterior spiracular groove; posterior tube slightly convoluted.

OTHER MATERIAL EXAMINED: **India:** *Kerala:* Cardamom Hills, Periyar, around Hotel Aranya Nivas, Nov. 5, 1972, sifting, tree bases, elev. 950 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12788), 1♂. *Tamil Nadu:* Cardamom Hills, 6 km NE Kumily, Nov. 3, 1972, sifting, elev. 700 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12510), 3♂; Palni Hills, 29 km E Kodaikanal, near Oothu, Nov. 11, 1972, elev. 1100 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12816), 2♀; Palni Hills, 36 km E Kodaikanal, Nov. 16, 1972, sifting, forest near river, elev. 850 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12333), 1♀; Palni Hills, 39 km E Kodaikanal, Nov. 11, 1972, sifting, elev. 650 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12815), 2♀; Varushanad Hills, Suruli Falls, Nov. 8, 1972, forest sifting, elev. 550 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12593), 1♂.

DISTRIBUTION: Kerala and Tamil Nadu, India.

Brignolia kumily, new species

Figures 367–400

TYPES: Male holotype and female allotype taken by sifting at an elevation of 950 m in the Cardamom Hills, between Pambanar and Peermade, Kerala, India (Nov. 5, 1972; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 12469).

ETYMOLOGY: The specific name is a noun in apposition taken from one of the localities at which the species has been found.

DIAGNOSIS: Although sometimes found sympatrically with *B. cardamom*, males have a much longer palpal bulb (figs. 375–384) and females lack the posterior epigastric triangle found in that species (figs. 396, 399, 400).

MALE (PBI_OON 12469, figs. 367–390): Total length 1.87. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity steep, with distinct shoulders, posterior margin squared. Sternum covered with small round pits. Scuto-pedicel region with widely W-shaped scutal ridge, so weak at middle as to resemble two V-shaped ridges but with row of tubercles opposite pedicel triangles, singlemost anterior tubercle enlarged. Palpal bulb dorsally excavated, with narrowed tip.

FEMALE (PBI_OON 12469, figs. 391–400): Total length 2.04. Epigastric area without external projections; posterior tube short, directly dorsally.

OTHER MATERIAL EXAMINED: **India:** *Kerala:* Cardamom Hills, Muttapatti near Munnar, Nov. 24, 1972, sifting in forest, base of tree roots, elev. 1700 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12305), 1♂; Cardamom Hills, between Pambanar and Peermade, Nov. 5, 1972, sifting, elev. 950 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12469), 3♂, 1♀. *Tamil Nadu:* Cardamom Hills, 2 km NE Kumily, Nov. 4, 1972, sifting in forest, elev. 900 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12843), 3♂.

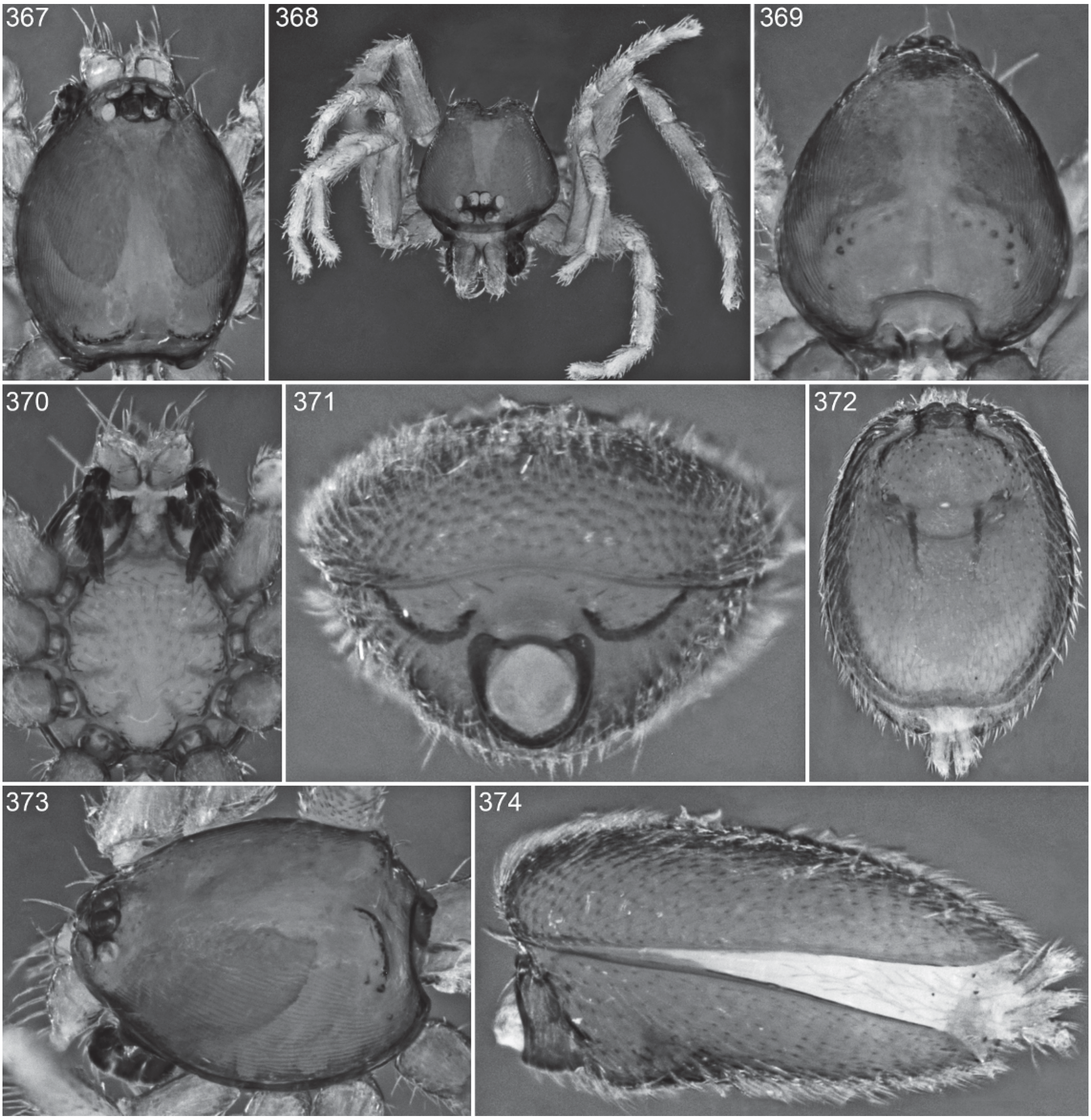
DISTRIBUTION: Kerala and Tamil Nadu, India.

Brignolia valparai, new species

Figures 401–424

TYPE: Male holotype taken by sifting in a forest with coffee at an elevation of 1100 m in the Anaimalai Hills, Valparai, Tamil Nadu, India (Nov. 20, 1972; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 12775).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.



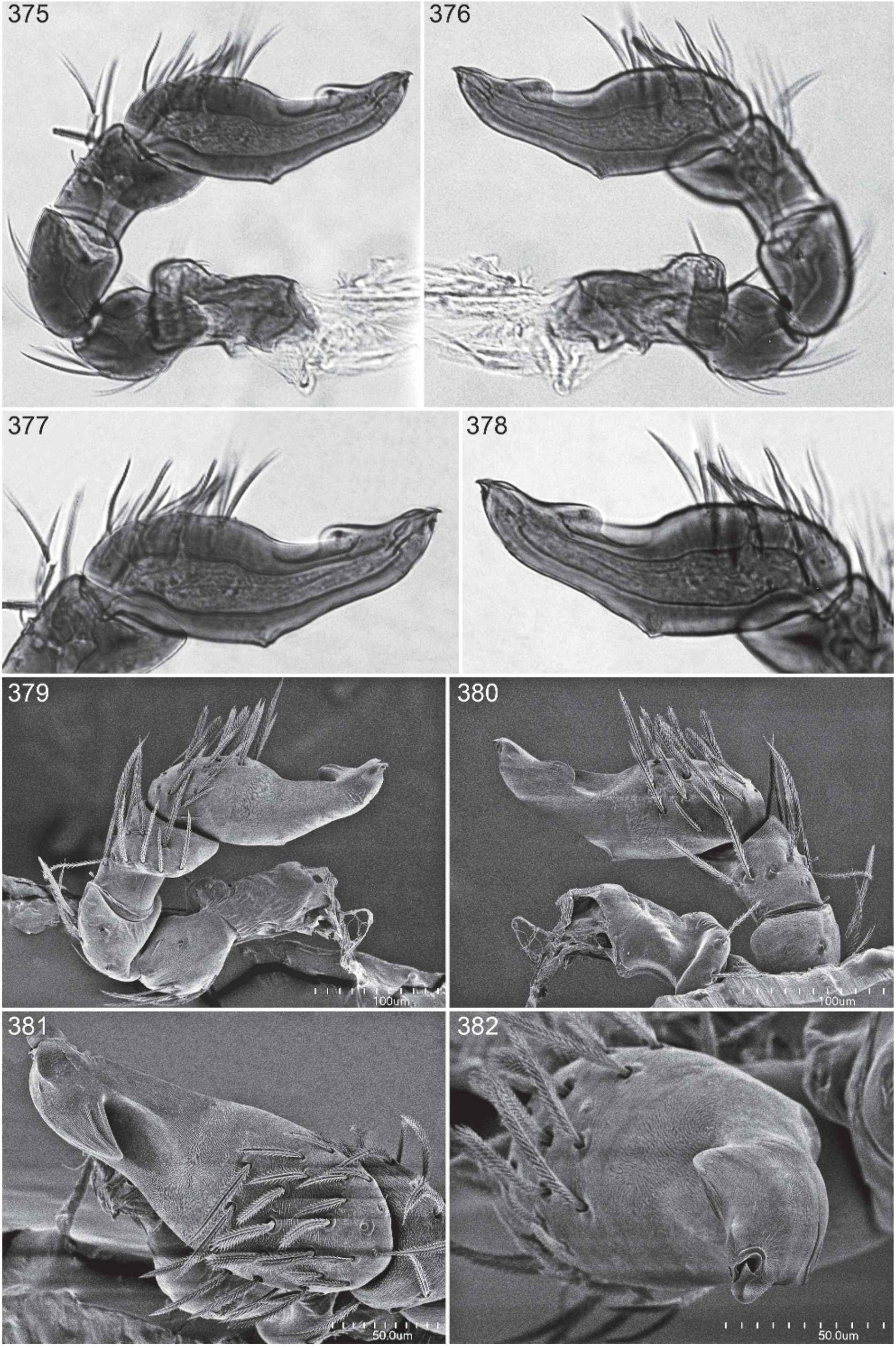
Figs. 367–374. *Brignolia kumily*, new species, male. **367.** Carapace, dorsal view. **368.** Same, anterior view. **369.** Same, posterior view. **370.** Cephalothorax, ventral view. **371.** Abdomen, anterior view. **372.** Same, ventral view. **373.** Carapace, lateral view. **374.** Abdomen, lateral view.

DIAGNOSIS: Males can easily be recognized by the arched and complex dorsal tip of the palpal bulb (figs. 409–418).

MALE (PBI_OON 12775, figs. 401–424): Total length 2.01. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity with distinct shoulders, posterior margin squared. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge, so weak at middle as to resemble two V-shaped ridges but with row of tubercles opposite pedicel triangles, most of anterior tubercle enlarged. Palpal bulb short, with ventral protrusion at about half its length, dorsal protrusion closer to tip.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: **India:** *Tamil Nadu:* Anaimalai Hills, 18 km N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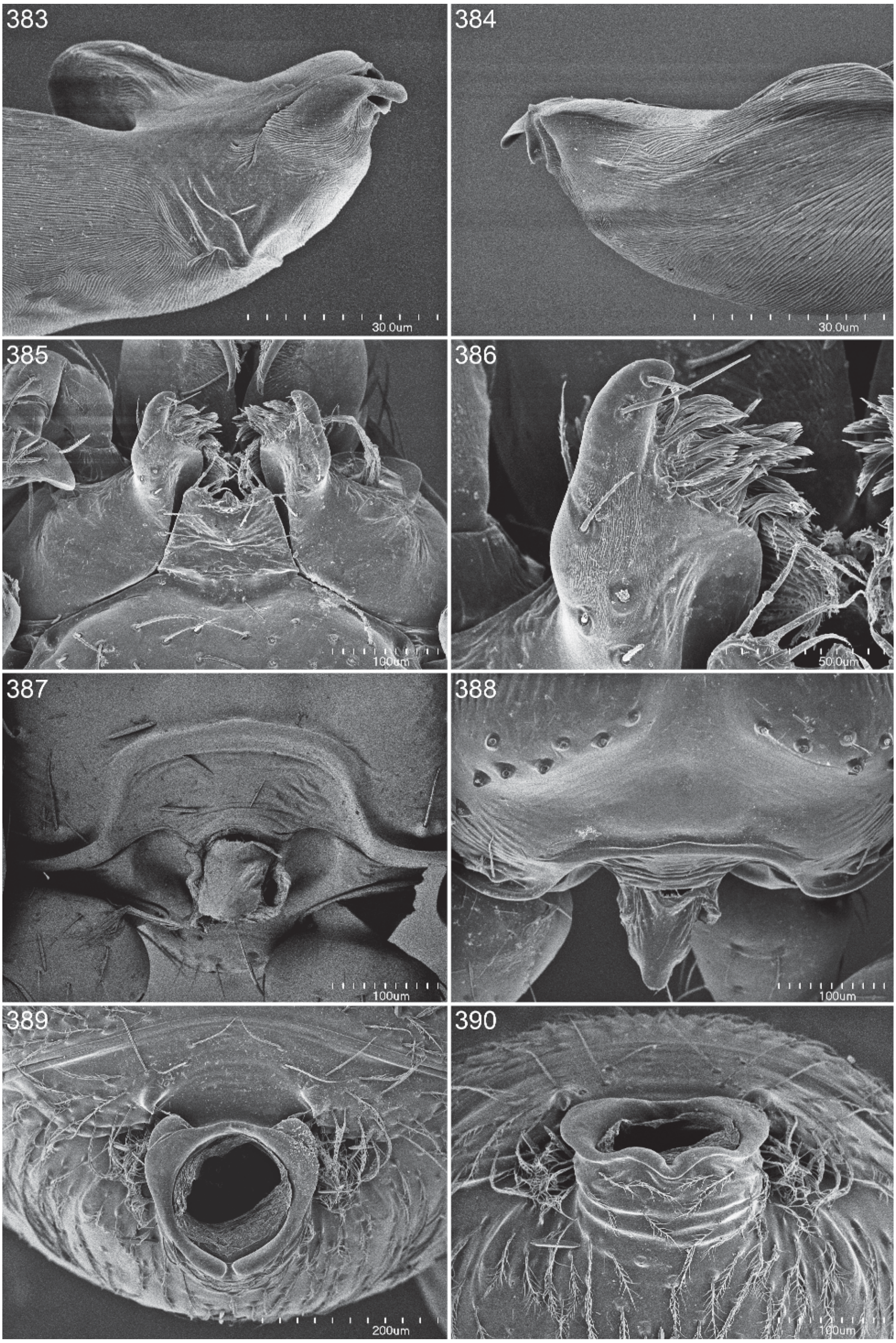
Figs. 375–382. *Brignolia kumily*, new species, male. **375, 379.** Left palp, prolateral view. **376, 380.** Same, retrolateral view. **377.** Left palpal bulb, prolateral view. **378.** Same, retrolateral view. **381.** Same, dorsal view. **382.** Same, ventral view.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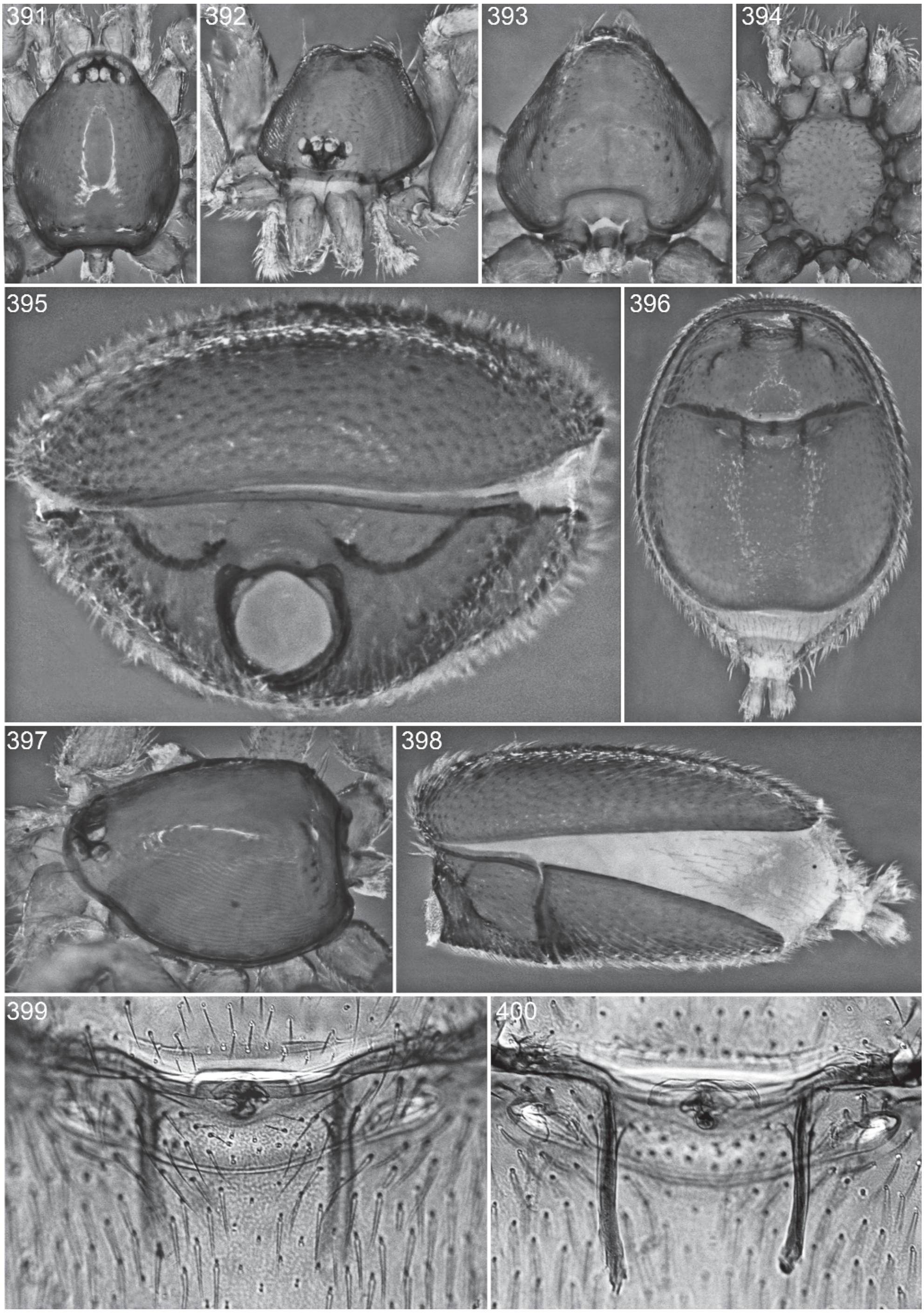
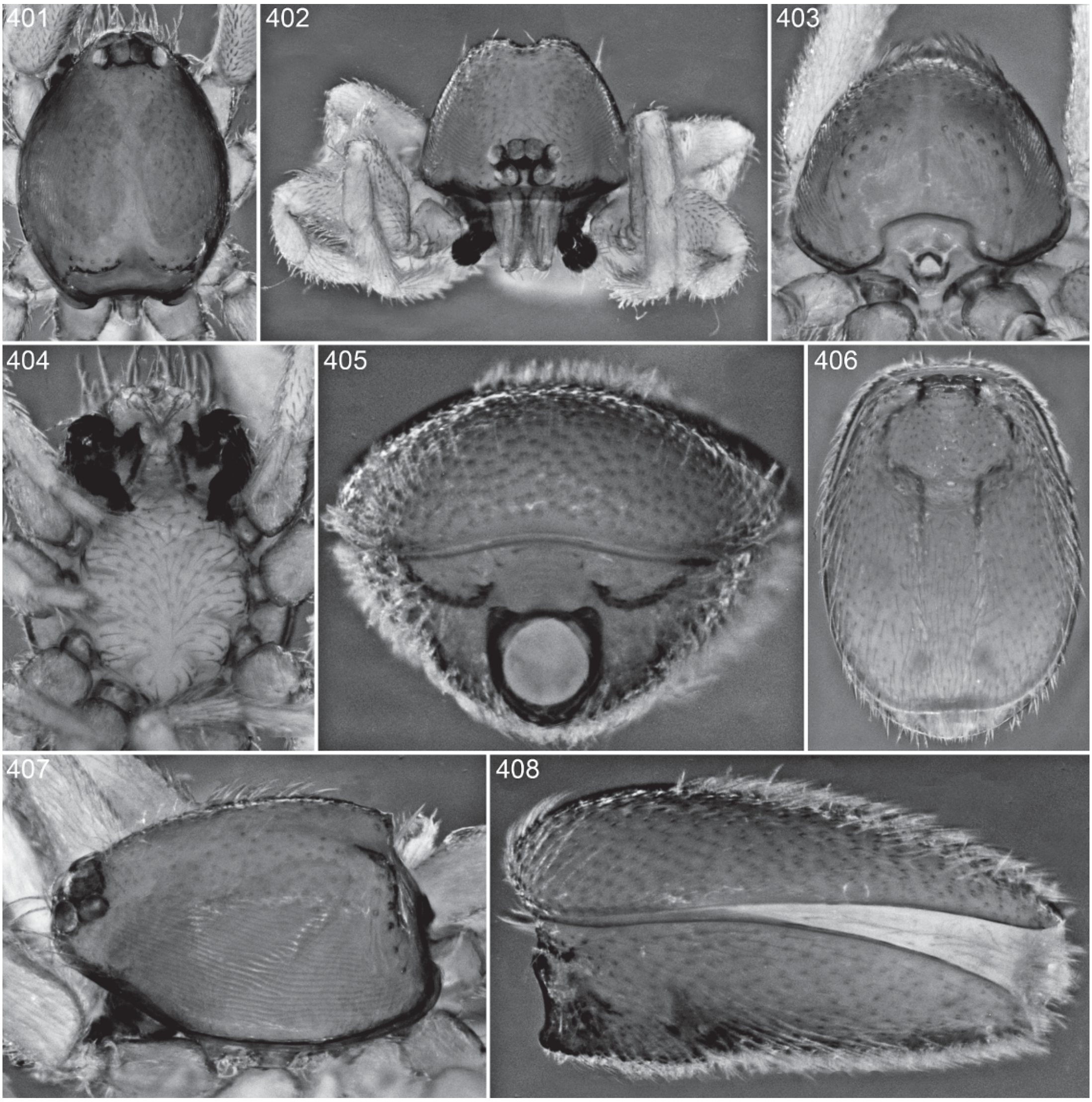
Figs. 383–390. *Brignolia kumily*, new species, male. **383.** Left palpal embolus, prolateral view. **384.** Same, retrolateral view. **385.** Labium and endites, ventral view. **386.** Tip of endite, ventral view. **387.** Carapace, posterior view. **388.** Posterior margin of carapace, dorsal view. **389.** Abdomen, anterior view. **390.** Pedicel tube, ventral view.



Figs. 391–400. *Brignolia kumily*, new species, female. **391.** Carapace, dorsal view. **392.** Same, anterior view. **393.** Same, posterior view. **394.** Cephalothorax, ventral view. **395.** Abdomen, anterior view. **396.** Same, ventral view. **397.** Carapace, lateral view. **398.** Abdomen, lateral view. **399.** Genitalia, ventral view. **400.** Same, dorsal view.



Figs. 401–408. *Brignolia valparai*, new species, male. **401.** Carapace, dorsal view. **402.** Same, anterior view. **403.** Same, posterior view. **404.** Cephalothorax, ventral view. **405.** Abdomen, anterior view. **406.** Same, ventral view. **407.** Carapace, lateral view. **408.** Abdomen, lateral view.

Valparai, Nov. 18, 1972, sifting in forest, elev. 1250 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12566), 2♂.

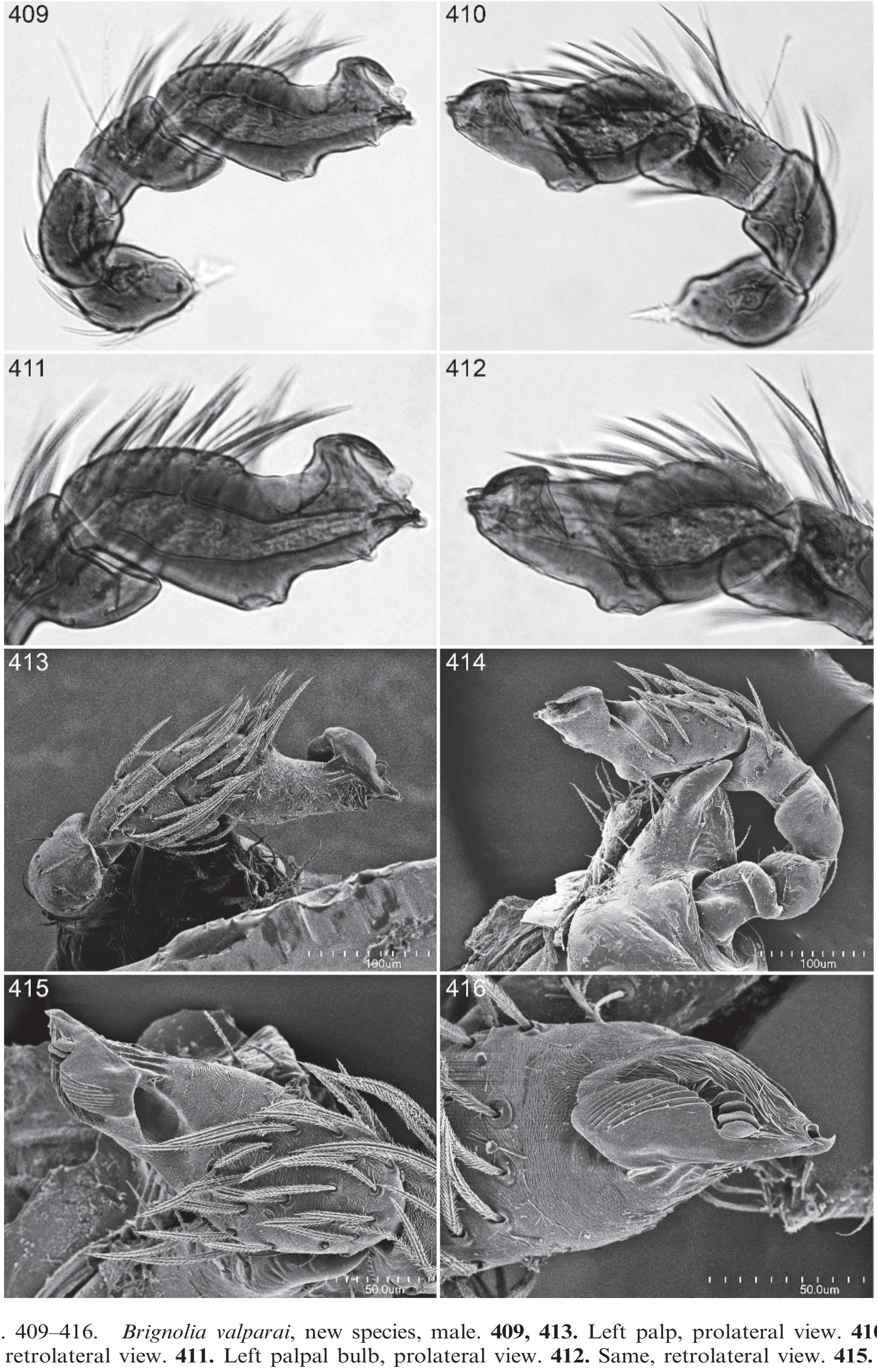
DISTRIBUTION: Tamil Nadu, India.

Brignolia kaikatty, new species
Figures 425–441

TYPE: Male holotype from taken by sifting in a forest at an elevation of 900 m at Kaikatty in the Nelliampathi Hills, NE Anaimalai Hills, Kerala, India (Nov. 30, 1972; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 12871).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be recognized by the retrolaterally invaginated dorsal protuberance on the palpal bulb (figs. 434, 436, 438).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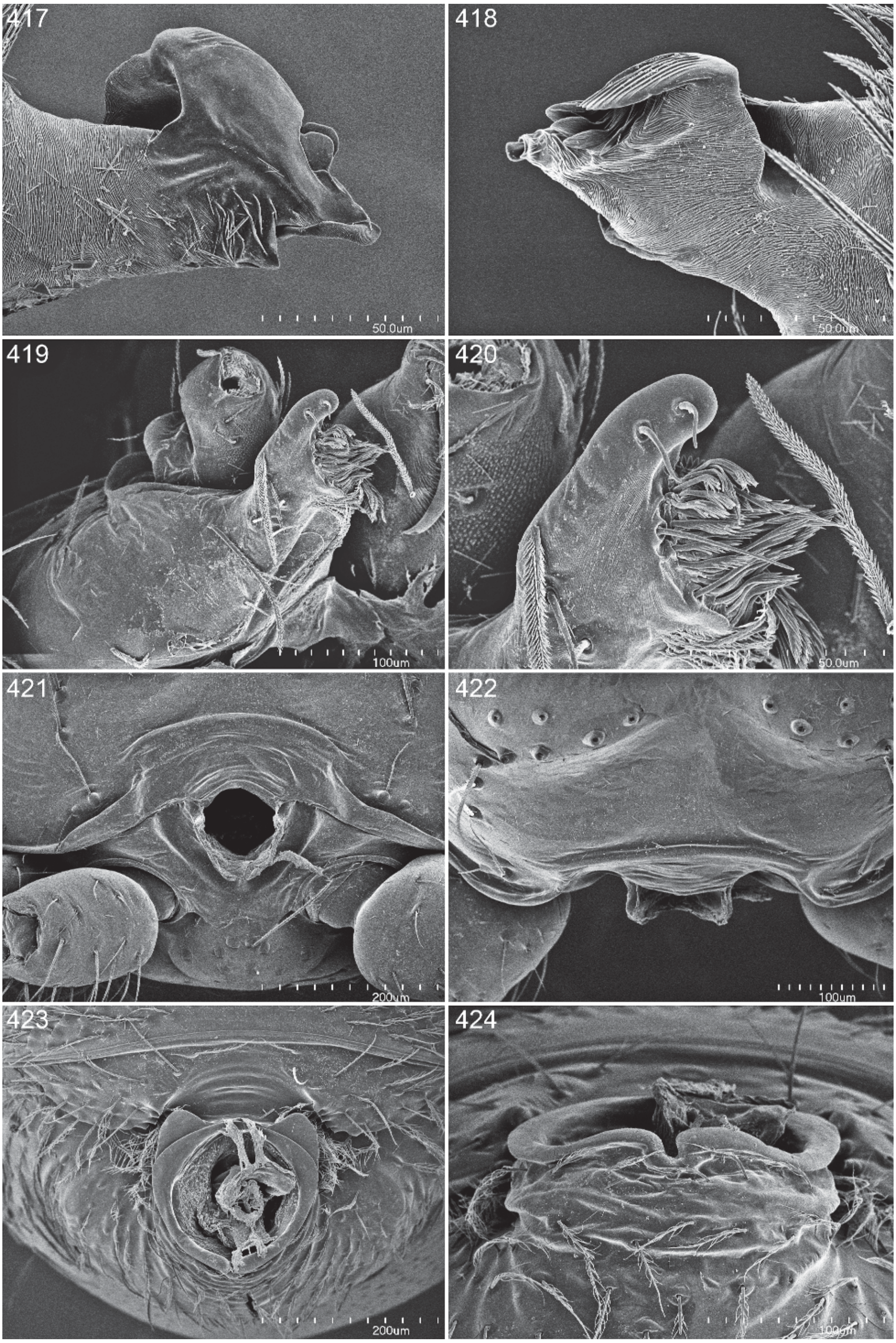
Figs. 409–416. *Brignolia valparai*, new species, male. **409, 413.** Left palp, prolateral view. **410, 414.** Same, retrolateral view. **411.** Left palpal bulb, prolateral view. **412.** Same, retrolateral view. **415.** Same, dorsal view. **416.** Same, ventral view.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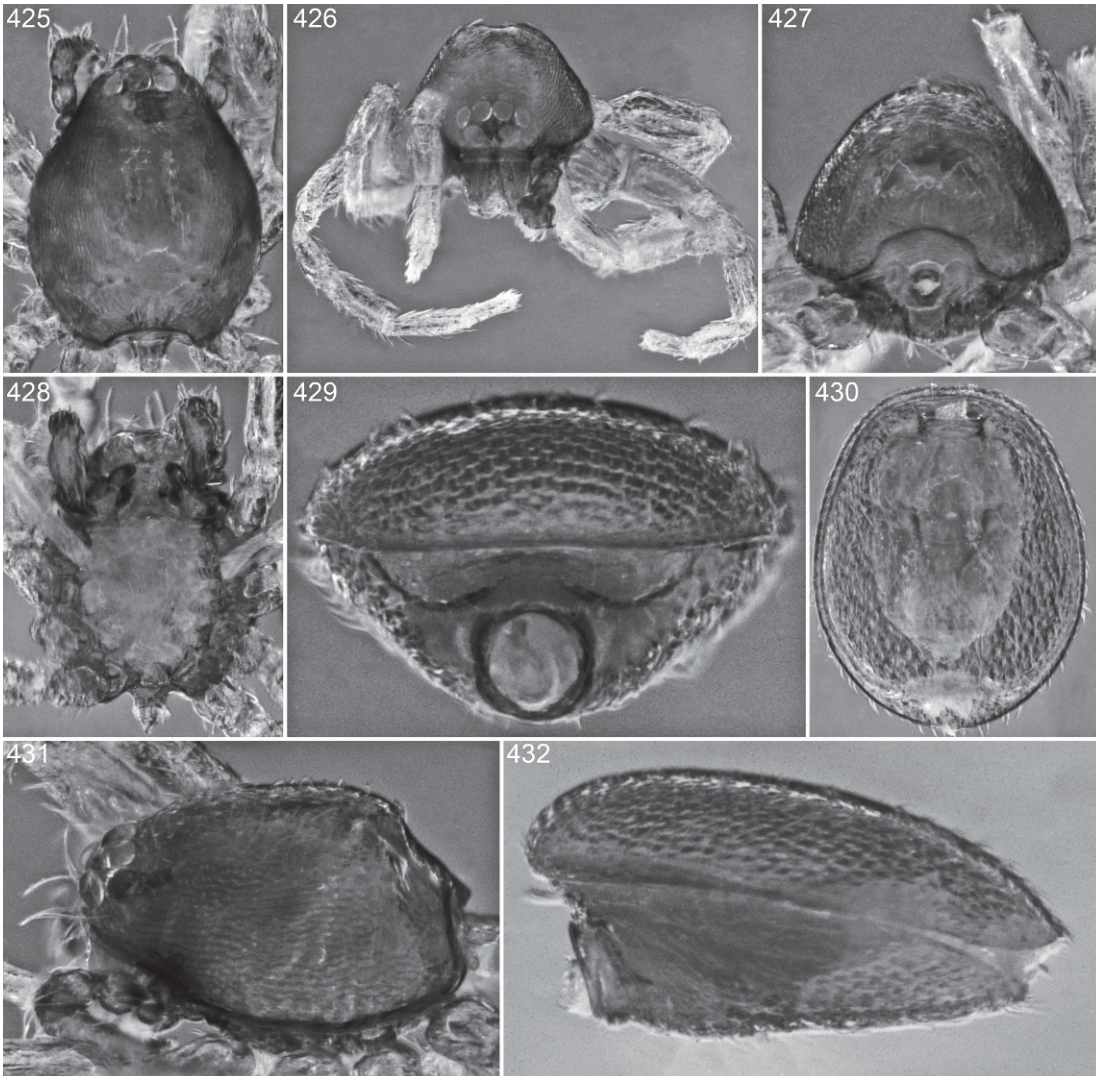
Figs. 417–424. *Brignolia valparai*, new species, male. **417.** Left palpal embolus, prolateral view. **418.** Same, retrolateral view. **419.** Endite, ventral view. **420.** Tip of endite, ventral view. **421.** Carapace, posterior view. **422.** Posterior margin of carapace, dorsal view. **423.** Abdomen, anterior view. **424.** Pedicel tube, ventral view.



Figs. 425–432. *Brignolia kaikatty*, new species, male. **425.** Carapace, dorsal view. **426.** Same, anterior view. **427.** Same, posterior view. **428.** Cephalothorax, ventral view. **429.** Abdomen, anterior view. **430.** Same, ventral view. **431.** Carapace, lateral view. **432.** Abdomen, lateral view.

MALE (PBI_OON 12871, figs. 425–441): Total length 1.39. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity with distinct shoulders, posterior margin squared. Sternum covered with small round pits. Scutopedicel region with W-shaped scutal ridge, weak at middle, with secondary dorsal ridge, without tubercles. Palpal bulb with deep dorsal excavation behind rounded dorsal protrusion.

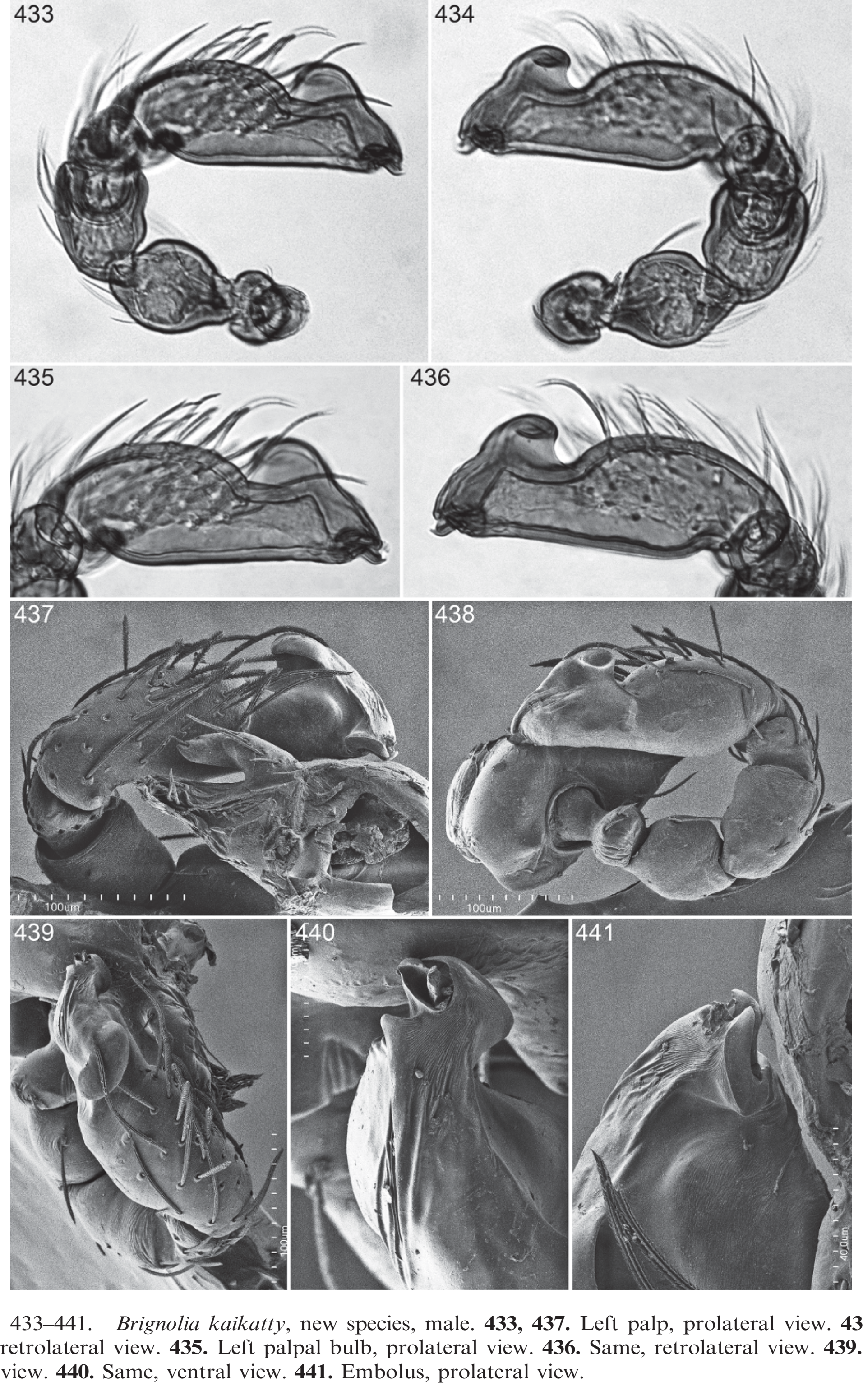
FEMALE: Unknown.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Kerala, India.

Brignolia nilgiri, new species
Figures 442–469

TYPES: Male holotype and female allotype taken by sifting in a forest at an elevation of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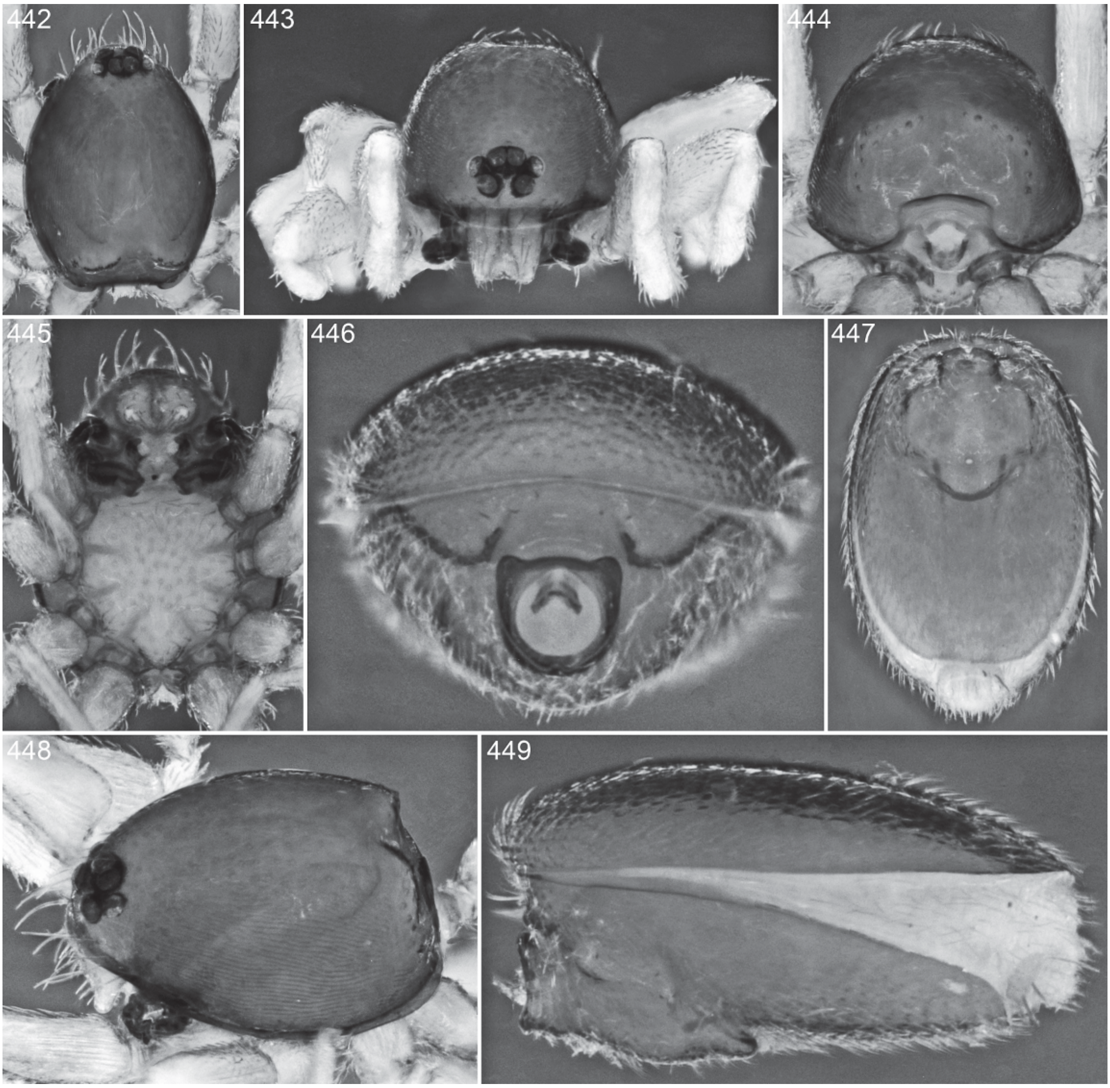
Figs. 433–441. *Brignolia kaikatty*, new species, male. **433, 437.** Left palp, prolateral view. **434, 438.** Same, retrolateral view. **435.** Left palpal bulb, prolateral view. **436.** Same, retrolateral view. **439.** Same, dorsal view. **440.** Same, ventral view. **441.** Embolus, prolateral view.



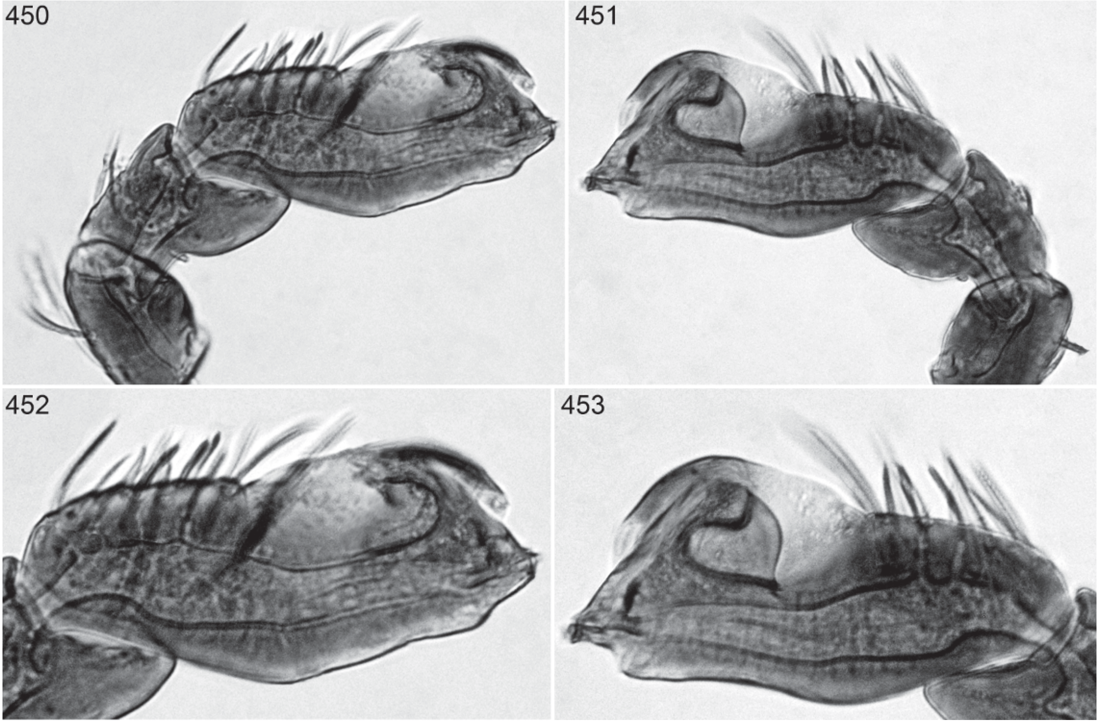
Figs. 442–449. *Brignolia nilgiri*, new species, male. **442.** Carapace, dorsal view. **443.** Same, anterior view. **444.** Same, posterior view. **445.** Cephalothorax, ventral view. **446.** Abdomen, anterior view. **447.** Same, ventral view. **448.** Carapace, lateral view. **449.** Abdomen, lateral view.

900 m at Nilgiri, 15 km E Coonoor, Tamil Nadu, India (Nov. 19, 1972; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 12524, 12802).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be recognized by the overhanging dorsal ledge on the palpal bulb (figs. 450, 452, 456, 458); the female genitalia resemble those of *B. rothorum* but have a longer triangle extending anteriorly from the posterior spiracular groove (figs. 468, 469) as well as a high-shouldered, square-rimmed carapace morphology.

MALE (PBI_OON 12524, figs. 442–459): Total length 1.91. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity with distinct shoulders, posterior margin squared. Sternum covered with small round pits. Scuto-pedicel region



Figs. 450–453. *Brignolia nilgiri*, new species, male. **450.** Left palp, prolateral view. **451.** Same, retrolateral view. **452.** Left palpal bulb, prolateral view. **453.** Same, retrolateral view.

with W-shaped scutal ridge, very deep but so weak near midline as to appear like two V-shaped ridges, without tubercles, but sclerotization weakened abruptly at width of pedicel triangles. Palpal bulb with deep dorsal excavation behind squared, apical, dorsal protrusion.

FEMALE (PBI_OON 12524, figs. 460–469): Total length 1.88. Postepigastric area with long, narrow, posteriorly directed anterior process and short, triangular, anteriorly directed posterior process; posterior tub squiggled.

OTHER MATERIAL EXAMINED: Two female taken with the types (MHNG PBI_OON 12802).

DISTRIBUTION: Tamil Nadu, India.

Brignolia kodaik, new species

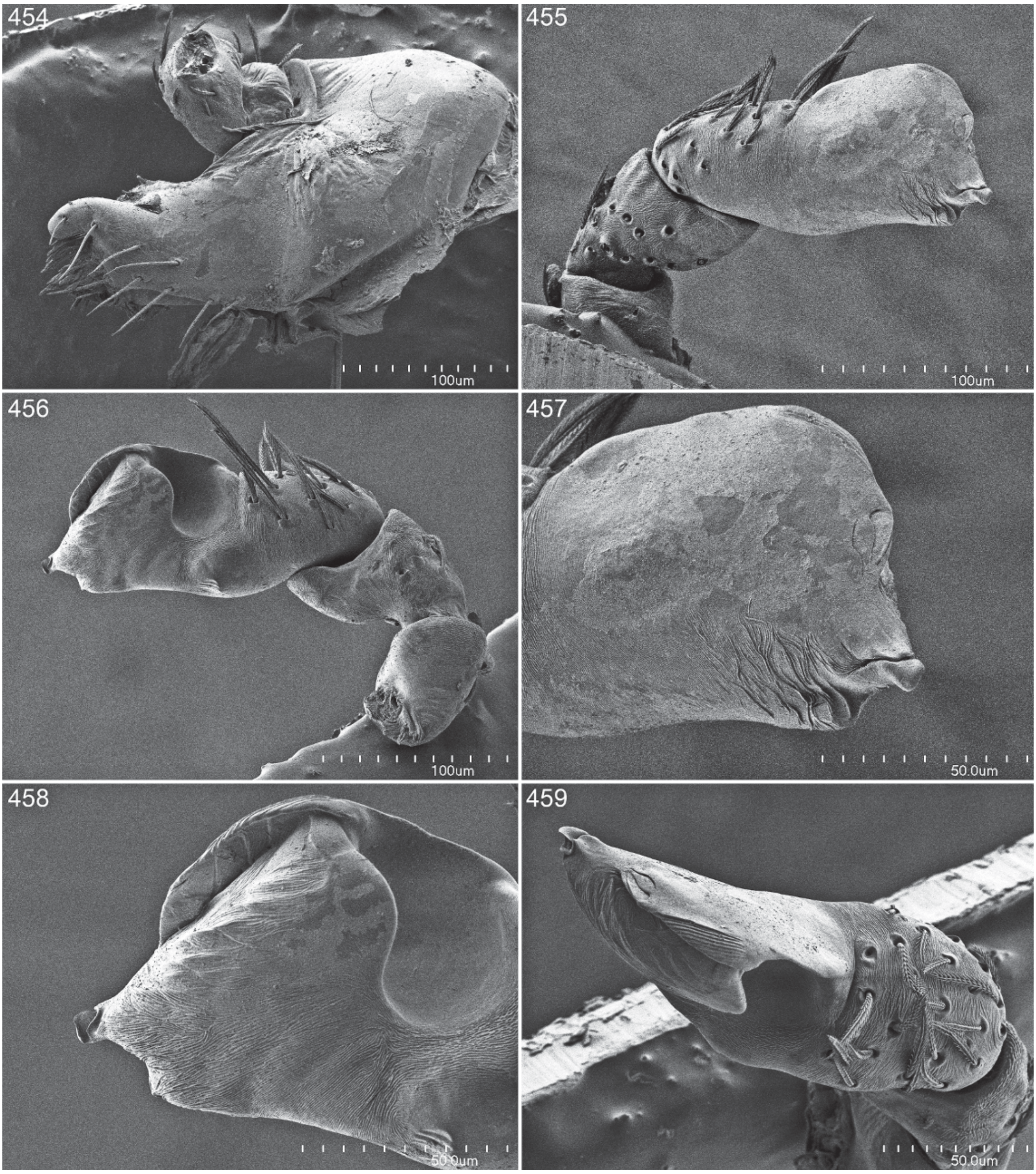
Figures 470–497

TYPE: Male holotype and female allotype from native cloud forest by falls at Kadaikanal, 10°15′N, 77°31′E, Tamil Nadu, India (Jan. 2, 1990; V., B. Roth), deposited in CAS (38443, PBI_OON 35302).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: This species is similar to *B. nilgiri* but males can be distinguished by the more sinuous and distally longer dorsal margin of the palpal bulb (figs. 478, 480, 483, 485) and females lack the triangular epigastric extension on the posterior spiracular groove (figs. 496. 497).

MALE (PBI_OON 35302, figs. 470–487): Total length 2.06. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity with distinct shoulders, posterior margin squared. Sternum covered with small round pits, with produced posterior ridge but ridge without tubercles. Scutopedicel region with W-shaped scutal ridge, very deep but so weak near midline as to appear like two V-shaped ridges, without tubercles, but sclerotization weakened



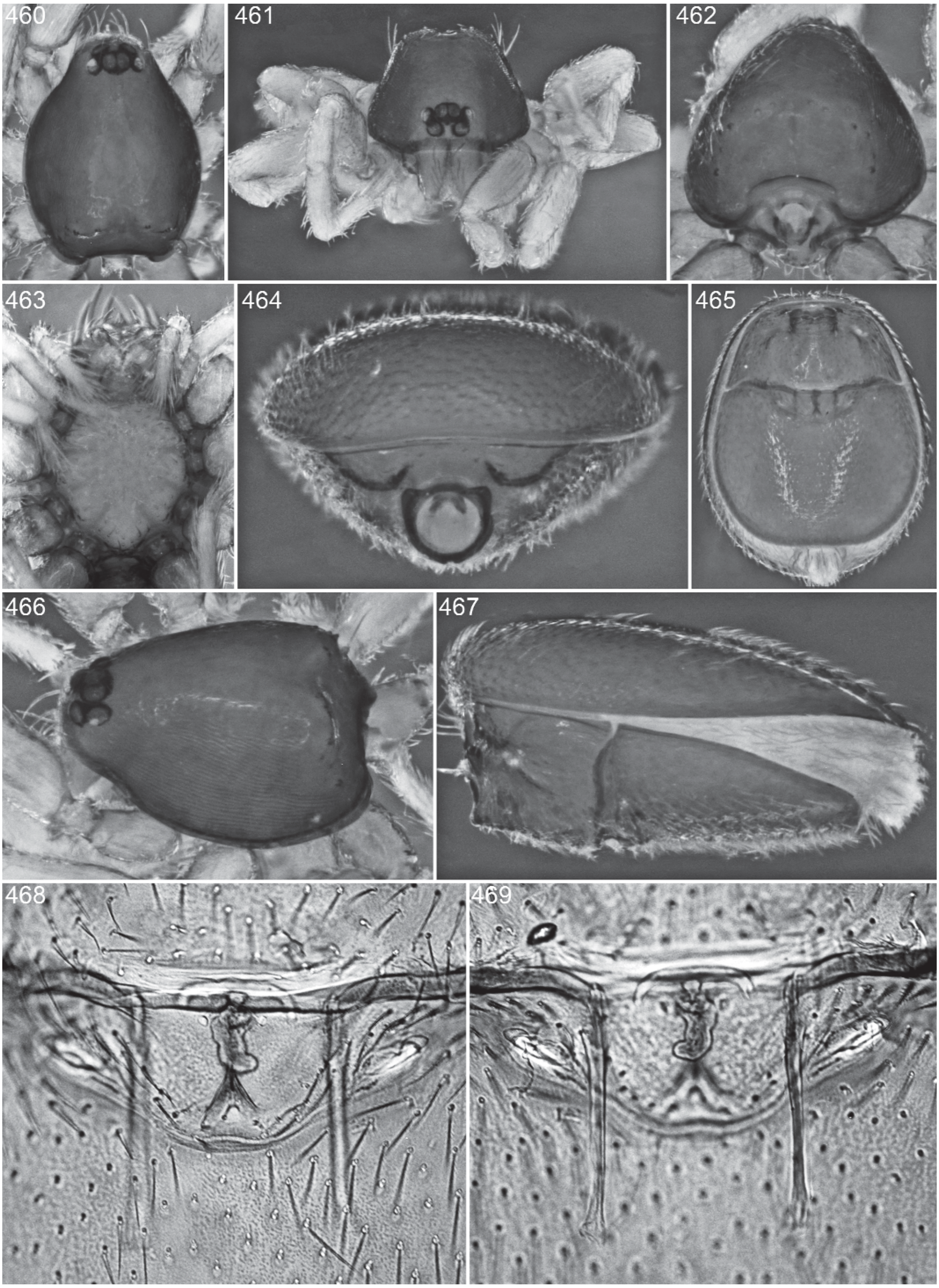
Figs. 454–459. *Brignolia nilgiri*, new species, male. **454.** Endite, ventral view. **455.** Left palp, prolateral view. **456.** Same, retrolateral view. **457.** Left palpal bulb, prolateral view. **458.** Same, retrolateral view. **459.** Same, dorsal view.

abruptly at width of pedicel triangles. Palpal bulb short, laterally flattened, with rounded dorsal tip.

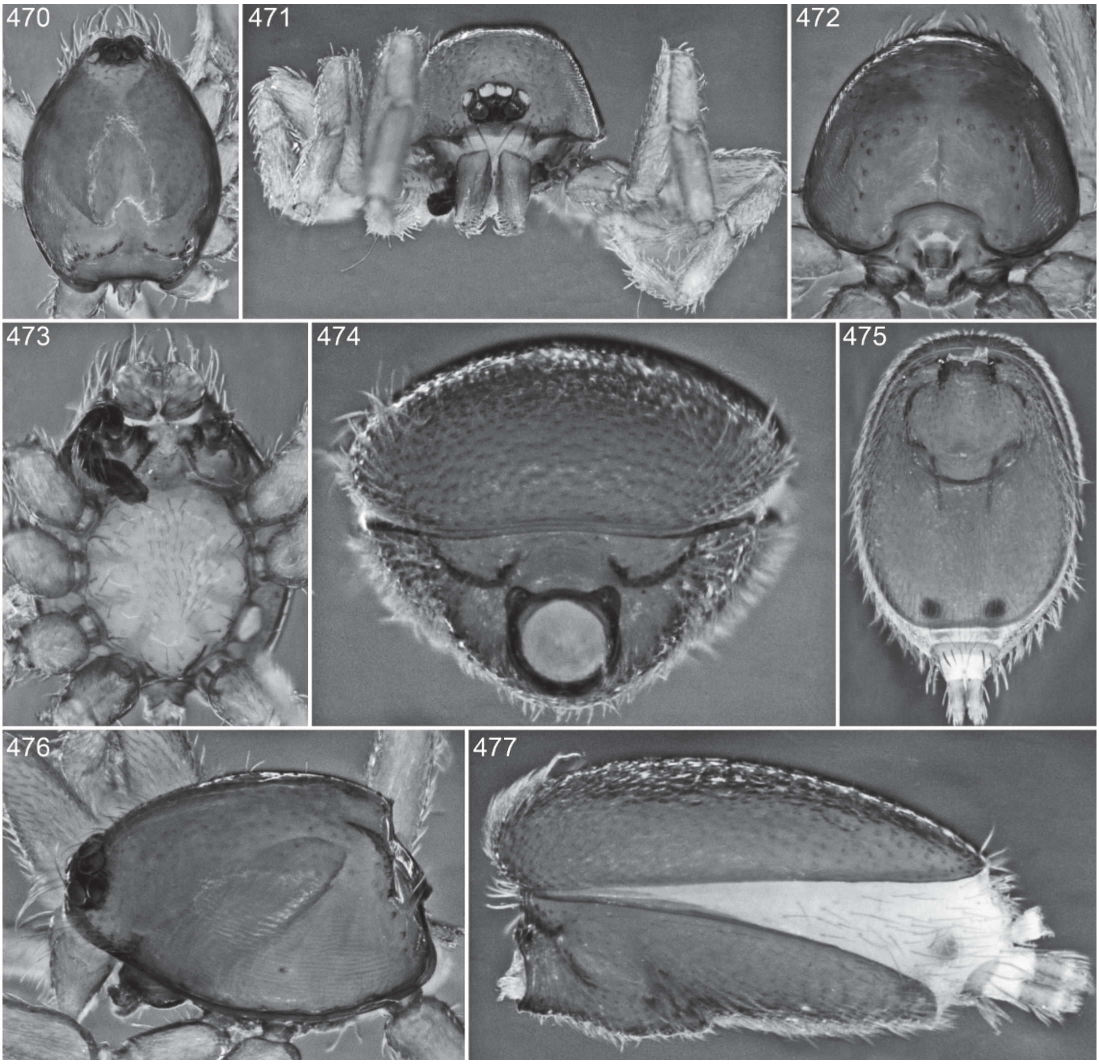
FEMALE (PBI_OON 35302, figs. 488–497): Total length 2.13. Postepigastric area with inverted T-shaped sclerite; posterior tube squiggled.

OTHER MATERIAL EXAMINED: One female taken with the types.

DISTRIBUTION: Tamil Nadu, India.



Figs. 460–469. *Brignolia nilgiri*, new species, female. **460.** Carapace, dorsal view. **461.** Same, anterior view. **462.** Same, posterior view. **463.** Cephalothorax, ventral view. **464.** Abdomen, anterior view. **465.** Same, ventral view. **466.** Carapace, lateral view. **467.** Abdomen, lateral view. **468.** Genitalia, ventral view. **469.** Same, dorsal view.



Figs. 470–477. *Brignolia kodaik*, new species, male. **470.** Carapace, dorsal view. **471.** Same, anterior view. **472.** Same, posterior view. **473.** Cephalothorax, ventral view. **474.** Abdomen, anterior view. **475.** Same, ventral view. **476.** Carapace, lateral view. **477.** Abdomen, lateral view.

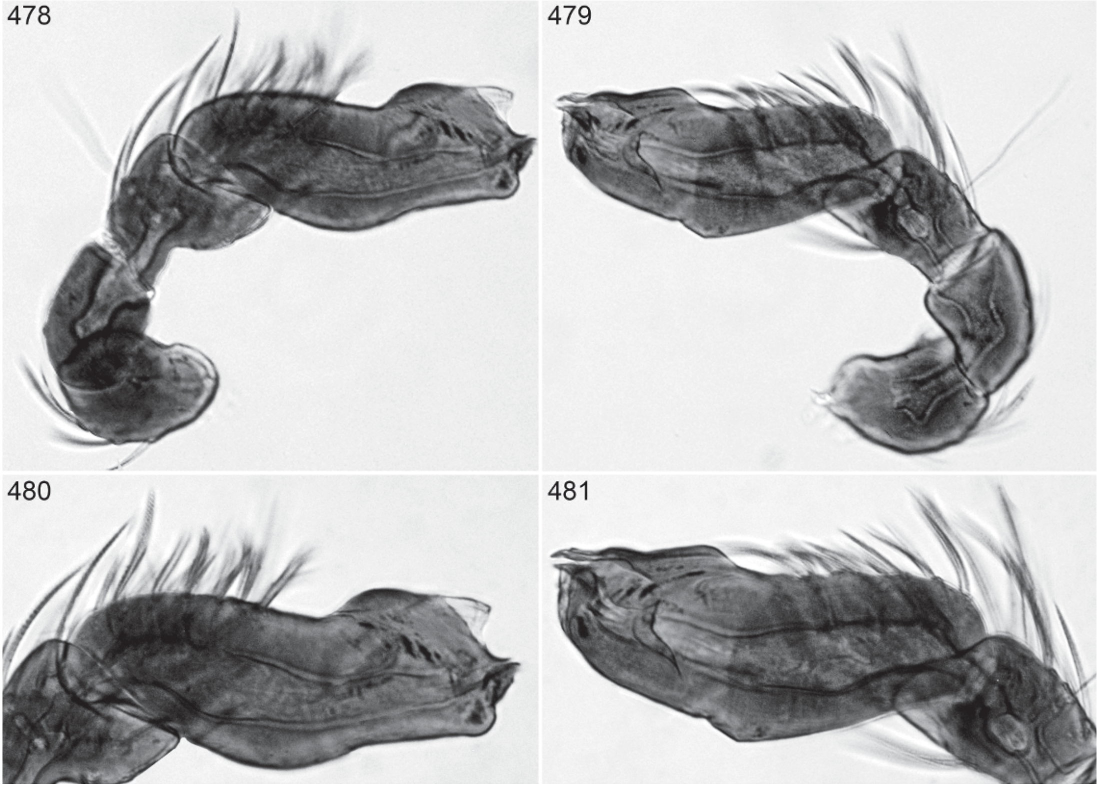
Brignolia jog, new species
Figures 498–514

TYPE: Male holotype from Jog Falls, 14°14′N, 74°50′E, Karnataka, India (Jan. 20–22, 1990; V., B. Roth), deposited in CAS (38455, PBI_OON 2448).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be recognized by the multilayered tip of the palpal bulb (figs. 506, 508, 514).

MALE (PBI_OON 2448, figs. 498–514): Total length 2.14. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, each shoulder with five tubercles in two irregular rows, posterior margin squared, sides with small diamond-shaped thickenings. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge, very deep but so weak near midline as



Figs. 478–481. *Brignolia kodaik*, new species, male. **478.** Left palp, prolateral view. **479.** Same, retrolateral view. **480.** Left palpal bulb, prolateral view. **481.** Same, retrolateral view.

to appear like two V-shaped ridges, without tubercles, but sclerotization weakened abruptly at width of pedicel triangles. Palpal bulb long, distally sinuous.

Female: Unknown.

Other Material Examined: None.

Distribution: Karnataka, India.

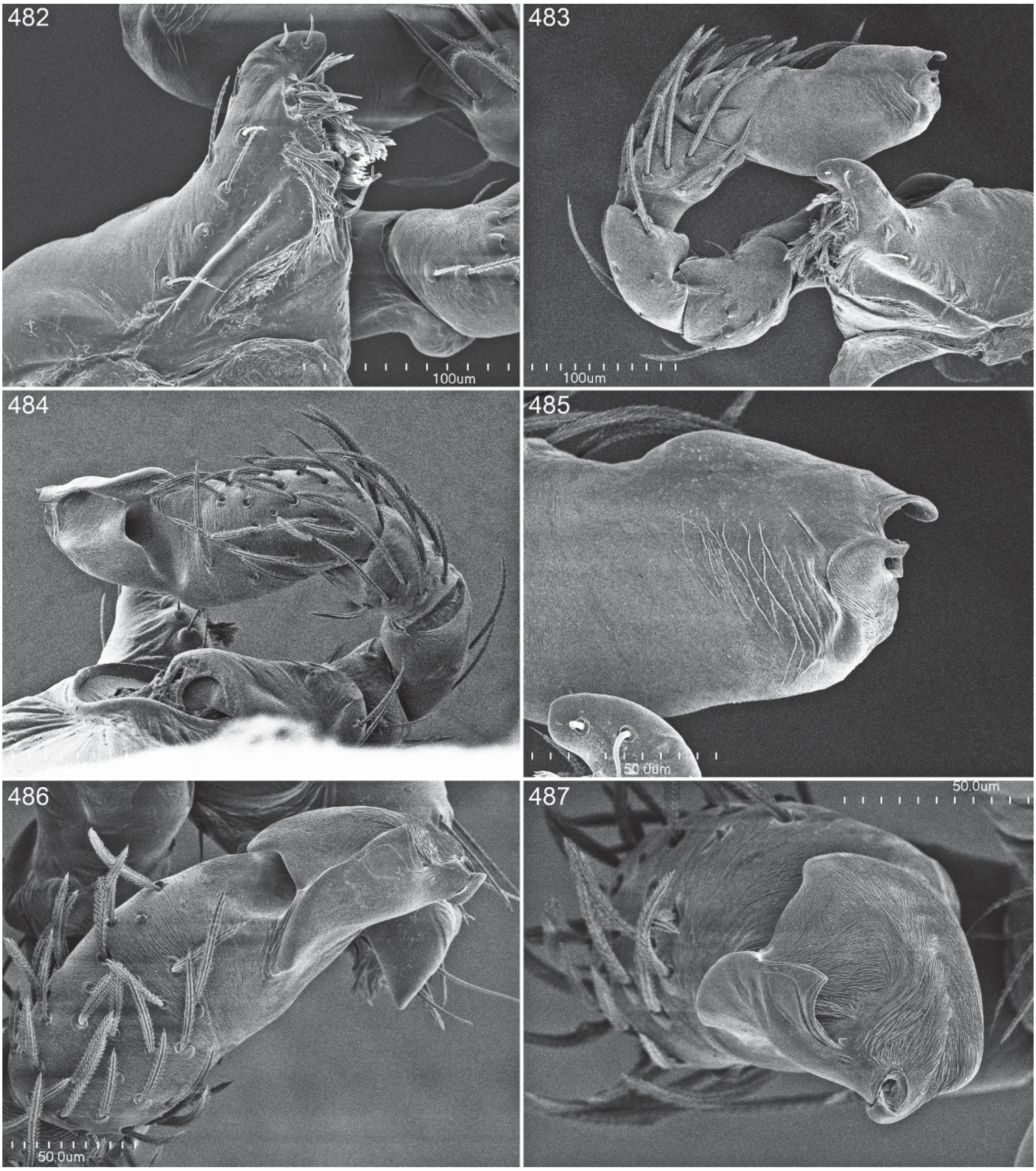
Brignolia karnataka, new species

Figures 515–524

Type: Female holotype from Jog Falls, 14°14′N, 74°50′E, Karnataka, India (Jan. 20–22, 1990; V., B. Roth), deposited in CAS (PBI_OON 517).

Etymology: The specific name is a noun in apposition taken from the type locality.

Diagnosis: Although the female holotype was collected with the male of *B. jog*, the somatic differences are so pronounced that we do not think the specimens are conspecific. Unlike the male of *B. jog*, there are only four, widely separated tubercles along the posterior edge of the pars cephalica, which also lacks the distinct projections found in the male. The posterior carapace margin has the sides much less pronounced, the pair of thickenings on the anterior margin are much more widely separated, and the posterior edge of the pars thoracica seems to lack the slitlike pits that are readily visible in the male. The scutal ridge on the abdomen is complete, with a thick margin along the midline that is shared only with the male of *B. bowleri* (although that male has an additional, more dorsal scutal ridge not found in this female). Also, the scutal ridge has an enlarged tubercle opposite each of the pedicel tube triangles, which are also much larger and less widely separated than in the male. In many of these characters, *B. karnataka* seems much more similar to *B. bengal* than to *B. jog*, but both the substantial geographic separation, and the lack, in the male of *B. bengal*, of the

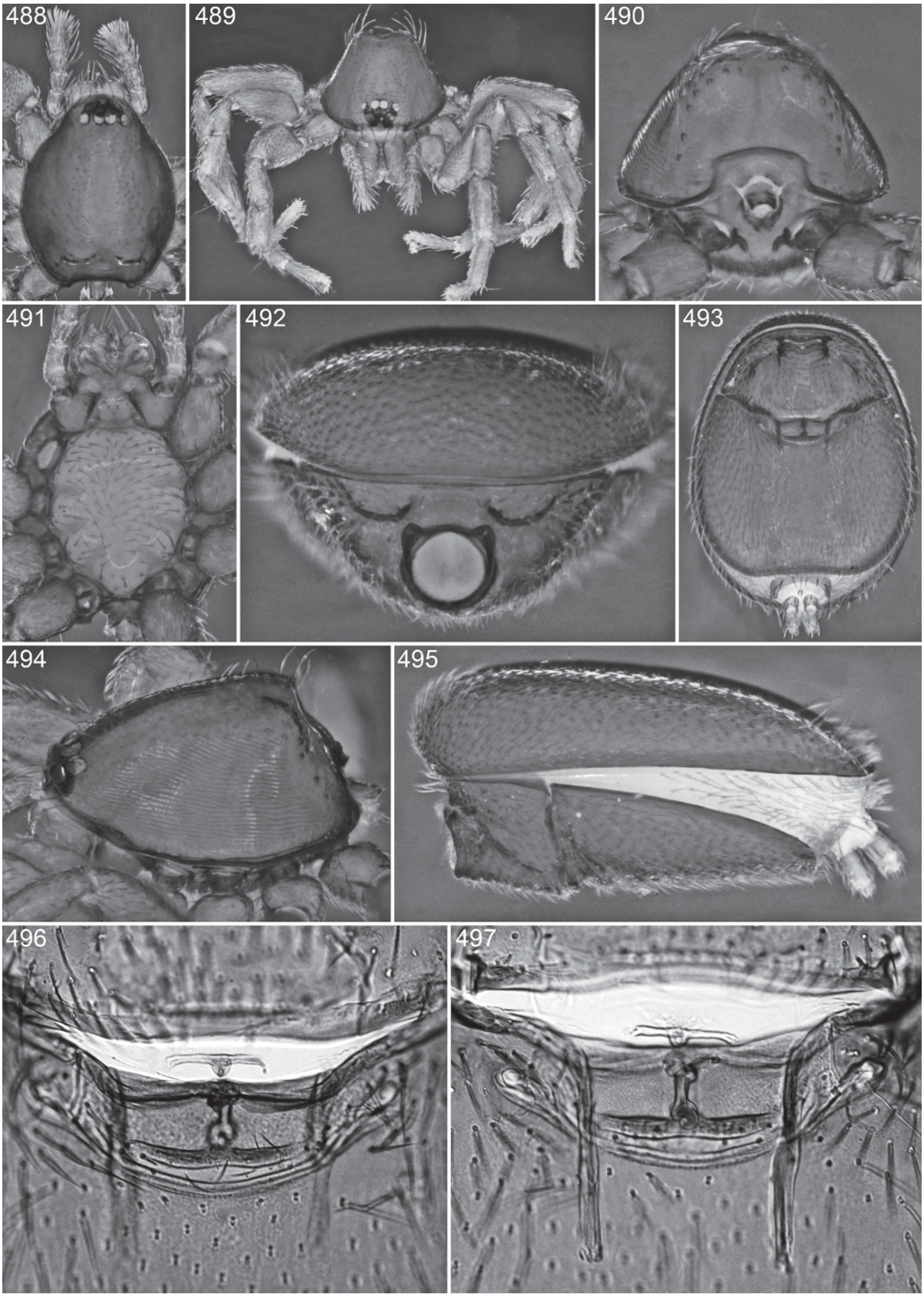


Figs. 482–487. *Brignolia kodaik*, new species, male. **482.** Endite, ventral view. **483.** Left palp, prolateral view. **484.** Same, retrolateral view. **485.** Left palpal bulb, prolateral view. **486.** Same, dorsal view. **487.** Same, ventral view.

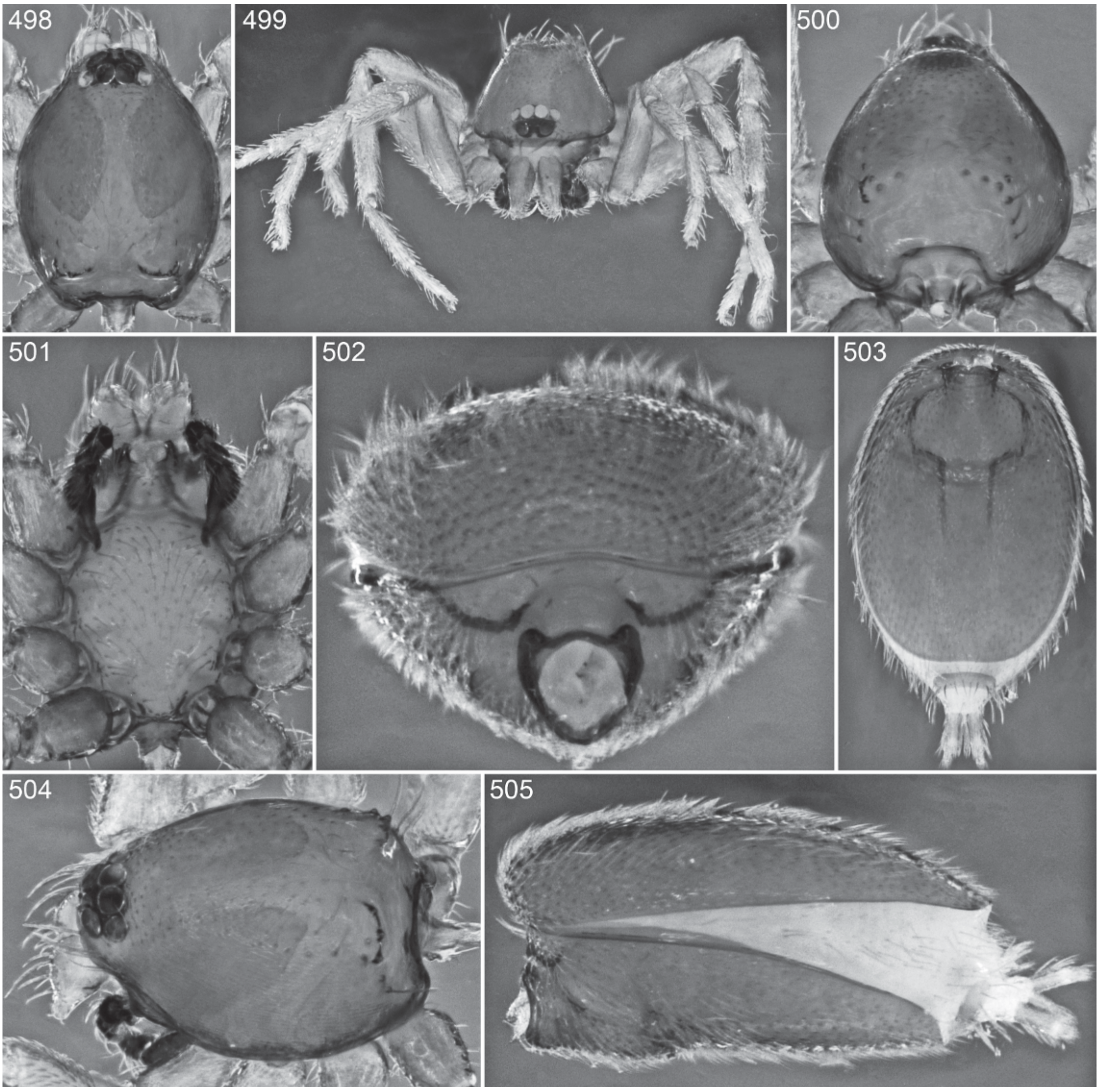
unusually dense plumose setation found around the pedicel tube in the female make it unlikely that they could be a match. The female genitalia of *B. karnataka* are also distinctive, with a triangular external projection (fig. 523) and a bifurcated posterior tube (fig. 524).

MALE: Unknown.

FEMALE (PBI_OON 517, figs. 515–524): Total length 2.20. Carapace orange-brown,



Figs. 488–497. *Brignolia kodaik*, new species, female. **488.** Carapace, dorsal view. **489.** Same, anterior view. **490.** Same, posterior view. **491.** Cephalothorax, ventral view. **492.** Abdomen, anterior view. **493.** Same, ventral view. **494.** Carapace, lateral view. **495.** Abdomen, lateral view. **496.** Genitalia, ventral view. **497.** Same, dorsal view.

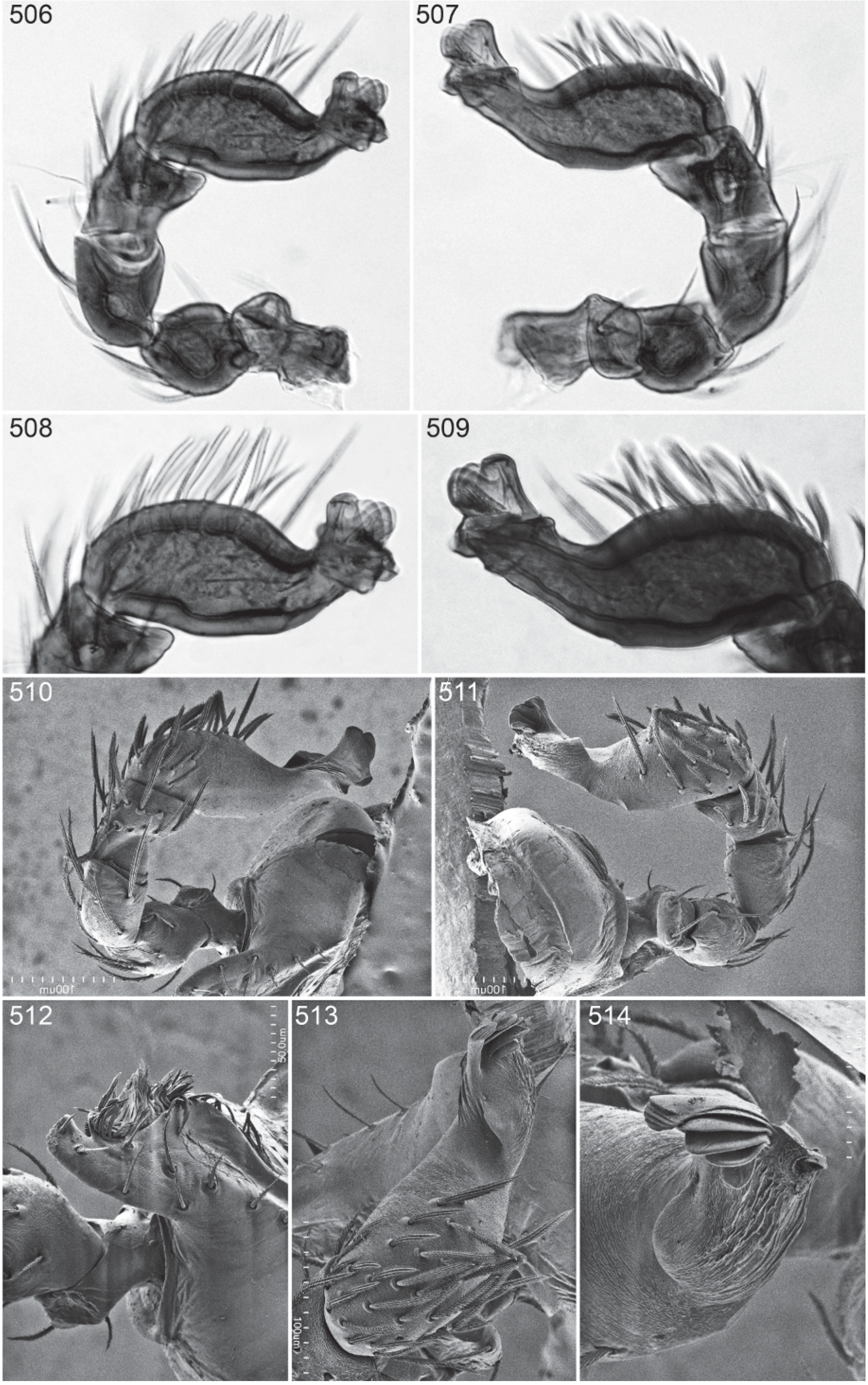


Figs. 498–505. *Brignolia jog*, new species, male. **498.** Carapace, dorsal view. **499.** Same, anterior view. **500.** Same, posterior view. **501.** Cephalothorax, ventral view. **502.** Abdomen, anterior view. **503.** Same, ventral view. **504.** Carapace, lateral view. **505.** Abdomen, lateral view.

without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge without pits, posterior declivity steep, posterior margin of pars cephalica with only two tubercles on each side, posterior margin squared, but sides weakly sclerotized, with small, widely separated, diamond-shaped thickenings. Sternum covered with small round pits, with pronounced posterior ridge lacking tubercles but with pair of thickened setae. Scuto-pedicel region with W-shaped scutal ridge with distinct margin even at midline, with single enlarged tubercle opposite each pedicel triangle. Posterior margin of epigastric furrow continued into triangular projection reaching almost to posterior spiracular groove; posterior tube apparently bifid.

Other Material Examined: None.

Distribution: Karnataka, India.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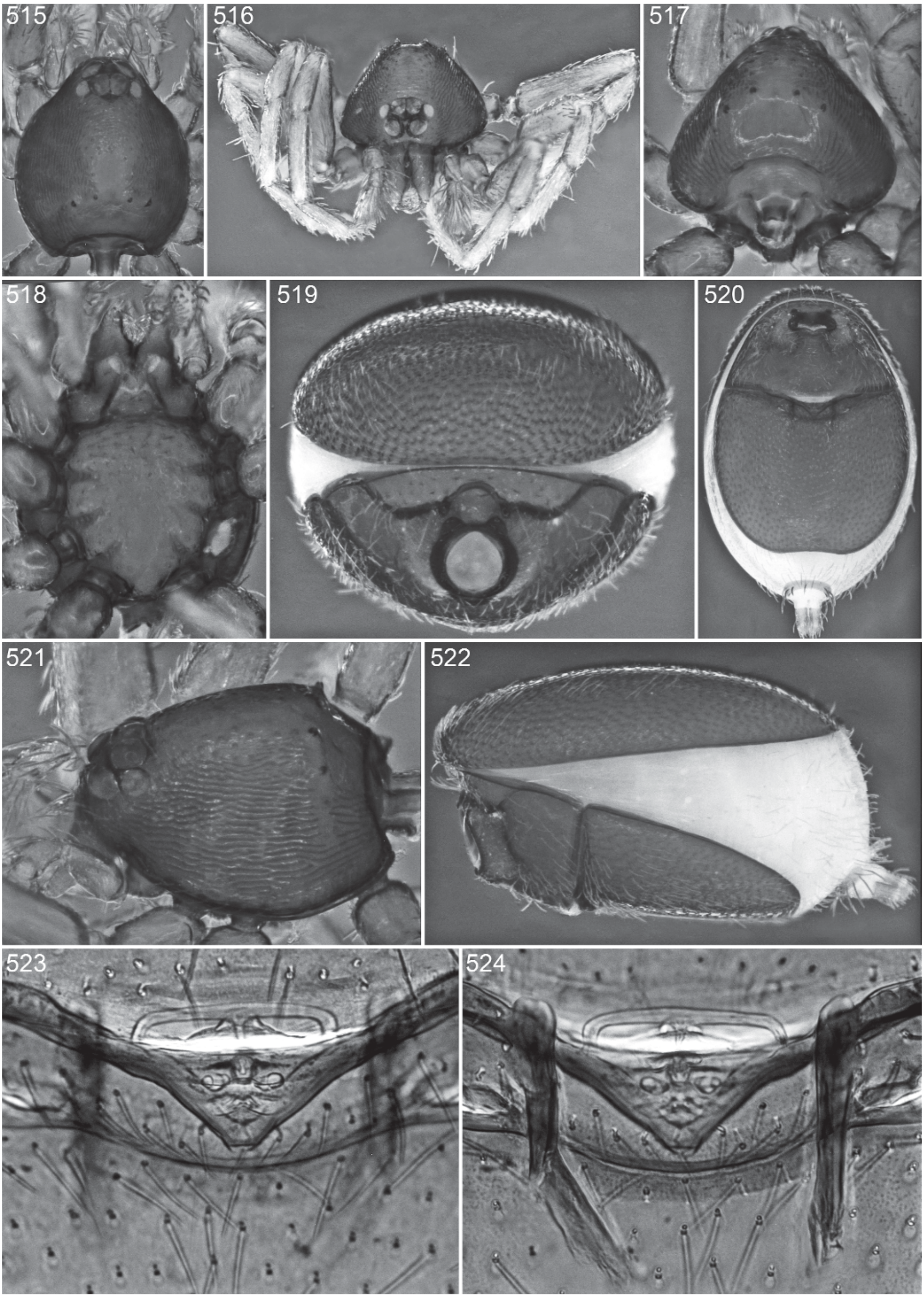
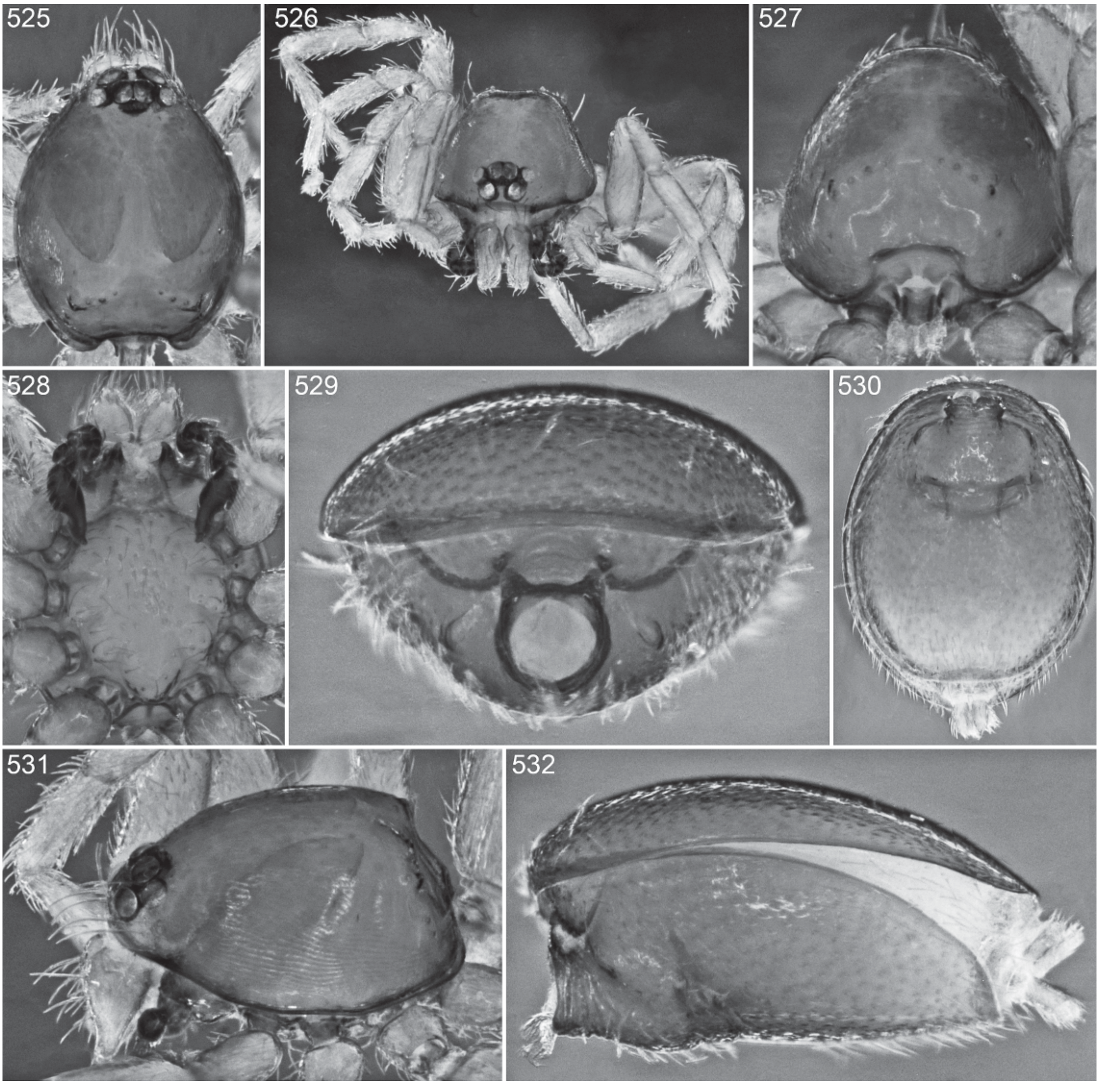
Figs. 506–514. *Brignolia jog*, new species, male. **506, 510.** Left palp, prolateral view. **507, 511.** Same, retrolateral view. **508.** Left palpal bulb, prolateral view. **509.** Same, retrolateral view. **512.** Endite, ventral view. **513.** Left palpal bulb, dorsal view. **514.** Same, ventral view.



Figs. 515–524. *Brignolia karnataka*, new species, female. **515.** Carapace, dorsal view. **516.** Same, anterior view. **517.** Same, posterior view. **518.** Cephalothorax, ventral view. **519.** Abdomen, anterior view. **520.** Same, ventral view. **521.** Carapace, lateral view. **522.** Abdomen, lateral view. **523.** Genitalia, ventral view. **524.** Same, dorsal view.



Figs. 525–532. *Brignolia bengal*, new species, male. **525.** Carapace, dorsal view. **526.** Same, anterior view. **527.** Same, posterior view. **528.** Cephalothorax, ventral view. **529.** Abdomen, anterior view. **530.** Same, ventral view. **531.** Carapace, lateral view. **532.** Abdomen, lateral view.

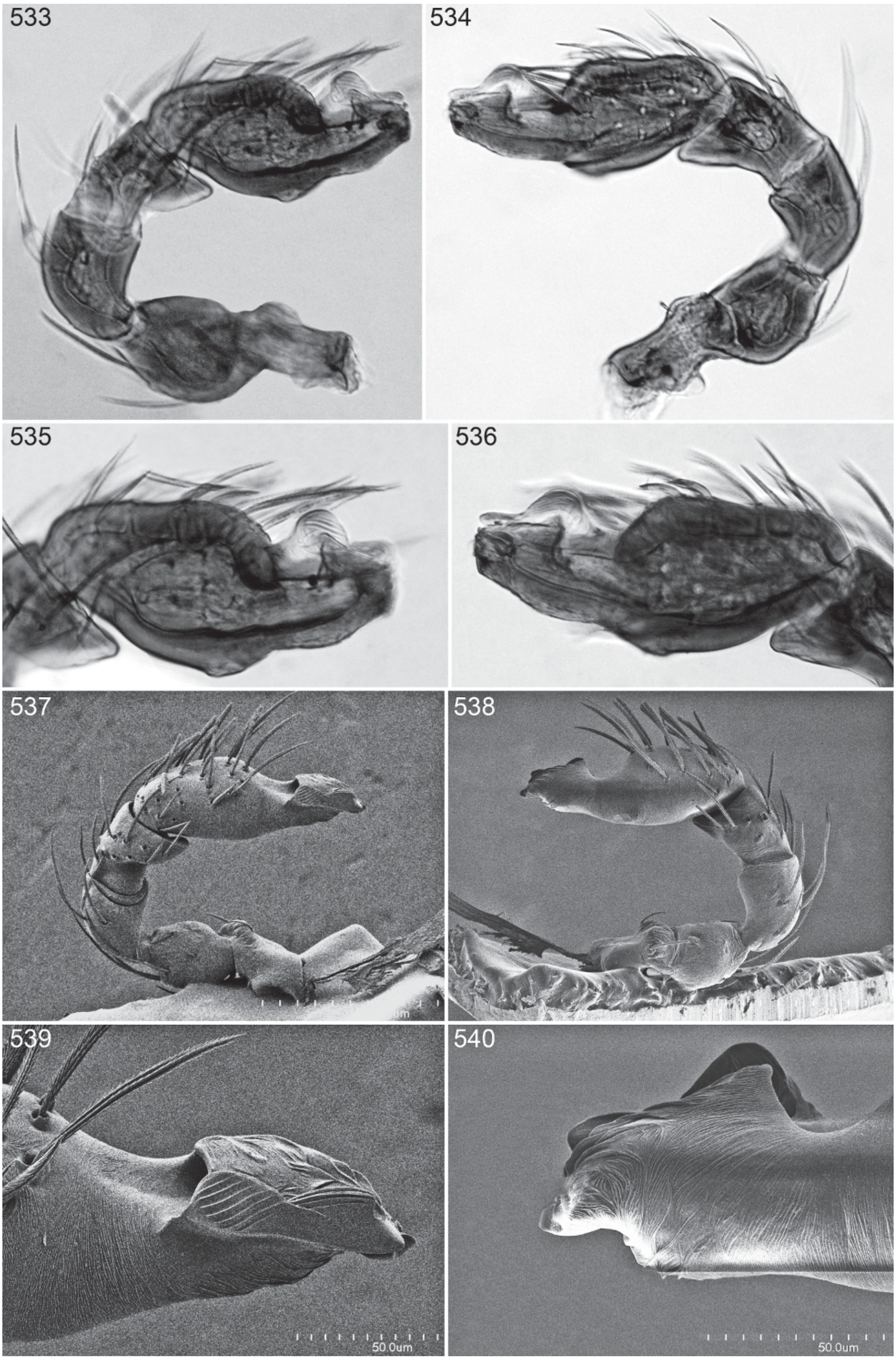
Brignolia bengal, new species
Figures 525–548

TYPE: Male holotype taken by sifting in forest at an elevation of 1200 m on a S slope at Mahanadi, near Kurseong, Darjeeling District, West Bengal, India (Oct. 6, 1978; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 15501).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be recognized by the sinuous, ridged tip of the palpal bulb (figs. 533, 535, 537, 539).

MALE (PBI_OON 15501, figs. 525–548): Total length 2.14. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, each with four tubercles of which first and third most lateral are enlarged, posterior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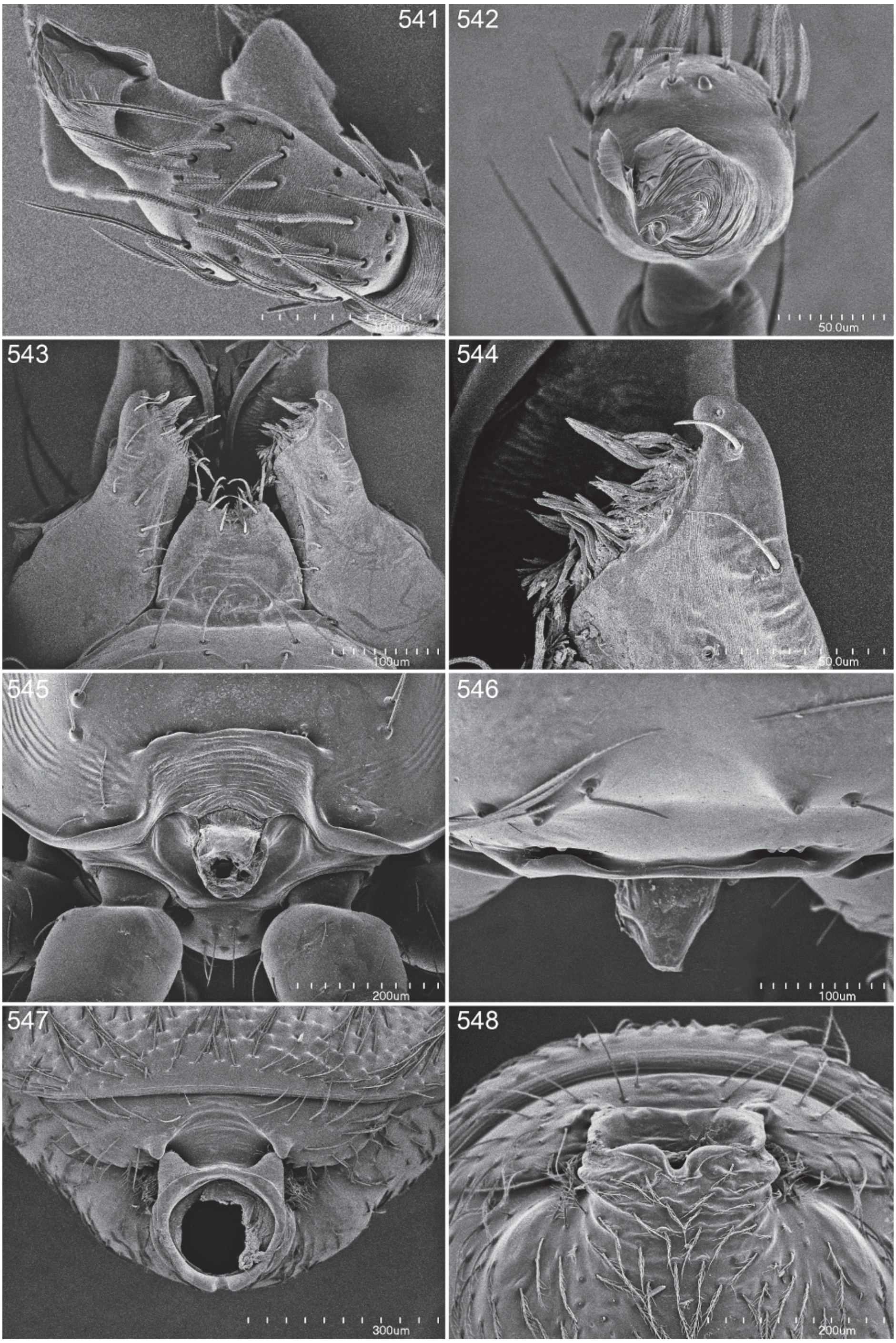
Figs. 533–540. *Brignolia bengal*, new species, male. **533, 537.** Left palp, prolateral view. **534, 538.** Same, retrolateral view. **535.** Left palpal bulb, prolateral view. **536.** Same, retrolateral view. **539.** Left palpal bulb, dorsal view. **540.** Same, ventral view.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Figs. 541–548. *Brignolia bengal*, new species, male. **541.** Left palpal bulb, dorsal view. **542**. Same, ventral view. **543.** Labium and endites, ventral view. **544.** Tip of endite, ventral view. **545.** Carapace, posterior view. **546.** Posterior margin of carapace, dorsal view. **547.** Abdomen, anterior view. **548.** Pedicel tube, ventral view.

margin squared, with pair of lateral thickenings. Sternum covered with small round pits. Scuto-pedicel region with deeply W-shaped scutal ridge, with enlarged tubercle on each side reaching to pedicel triangle. Distal portion of palpal bulb with ridged, translucent dorsal lobe.

FEMALE: Unknown.

OTHER MATERIAL EXAMINED: One male taken with the holotype (MHNG PBI_OON 12728).

DISTRIBUTION: West Bengal, India.

Brignolia sukna, new species
Figures 549–586

TYPE: Male holotype and female allotype from taken at an elevation of 900–1000 m at Num Khok, 27°33′N, 87°18′E, Kosi, Nepal (June 8–10, 2001), deposited in NHB (PBI_OON 31834).

ETYMOLOGY: The specific name is a noun in apposition taken from the only Indian locality record for this species.

DIAGNOSIS: Males of this species resemble those of *B. bengal* in having greatly enlarged pedicel triangles (figs. 571, 575), but can easily be distinguished by the distally thickened palpal bulb (figs. 559, 561); females of *B. bengal* are unknown, but those of *B. sukna* can be recognized by the relatively short and wide posterior tube (figs. 585, 586).

MALE (PBI_OON 15772, figs. 549–572): Total length 1.90. Carapace orange-brown, with dark brown egg-shaped patches behind eyes; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, each shoulder with four tubercles, most lateral tubercle enlarged, posterior margin squared, with relatively wide lateral thickened sclerotizations. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge, with enlarged tubercle on each side reaching to pedicel triangle. Palpal tibia ventrally expanded at tip; distal portion of palpal bulb with elaborately ridged process at tip.

FEMALE (PBI_OON 31834, figs. 573–586): Total length 2.31. Posterior margin of epigastric furrow with only slight, posterior directed, triangular projection at midline; posterior tube relatively short.

OTHER MATERIAL EXAMINED: **India:** *West Bengal:* Sukna, Oct. 7, 1978, elev. 200 m (C. Besuchet, I. Löbl, MHNG PBI_OON 12834), 1♂. **Nepal:** *Ilam:* Bililate, near Ilam, Apr. 8, 1988, moist soil, remnant trees around spring, elev. 1330 m (J. Martens, W. Schawaller, NMB PBI_OON 15980), 2♂; 5 km N Sanishare, feet of Siwalik Mountains, Apr. 3–5, 1988, mixed Shorea forest, elev. 270–300 m (J. Martens, W. Schawaller, NMB PBI_OON 15711, 15843), 2♂, 1♀. *Kosi:* Num Khok, 27°33′N, 87°18′E, June 8–10, 2001, elev. 900–1000 m (NHB PBI_OON 31834), 3♀; Arun valley, bottom, between Hedangna and Num, June 6–8, 1988, subtropical forest, elev. 950–1000 m (J. Martens, W. Schawaller, NMB PBI_OON 15772), 3♂; Arun valley, above Num, near main bridge, Apr. 21, 1984, ravine sides, elev. 1100 m (I. Löbl, A. Smetana, MHNG PBI_OON 15525), 3♂. *Taplejung:* Tamur Khola, Chirua, Sept. 14, 1983, soil, ravine, elev. 1200 m (J. Martens, Daams, NMB PBI_OON 15754), 1♂.

DISTRIBUTION: Northern India and Nepal.

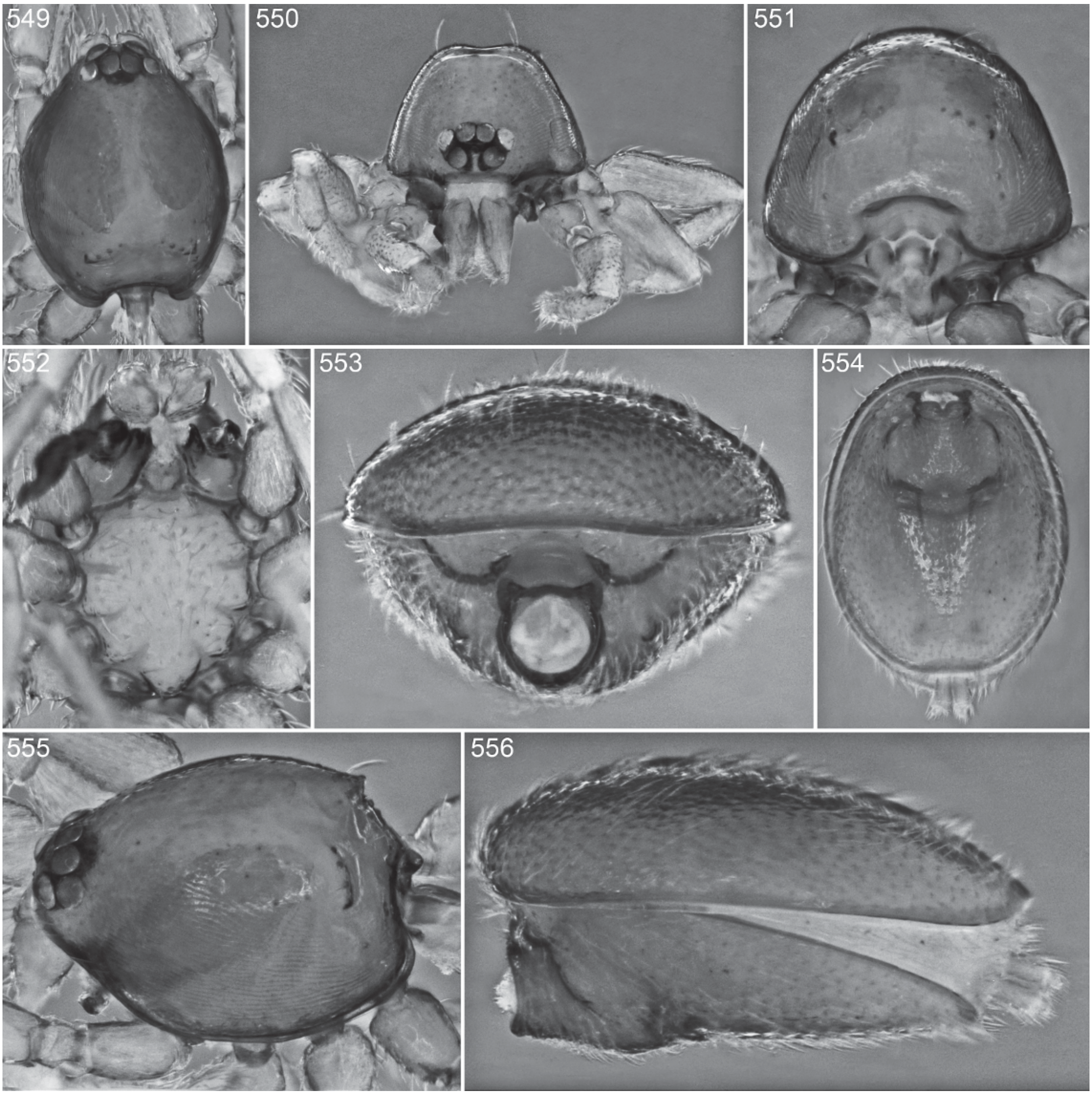
Brignolia assam, new species
Figures 587–610

TYPE: Male holotype taken at an elevation of 200 m at Manas, Assam, India (Oct. 23, 1978; C. Besuchet, I. Löbl), deposited in MHNG (PBI_OON 12832).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Males can easily be recognized by the translucent and distally curved ventral protrusion at the tip of the bulb (figs. 595, 597). No significant differences have been detected between the holotype from India and the male from Nepal that is here also assigned to the species (figs. 599, 601).

MALE (PBI_OON 12832, figs. 587–610): Total length 1.93. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, but tubercles not enlarged, posterior rim squared, with pair of lateral sclerotizations. Sternum covered with small round pits, with distinct, U-shaped posterior ridge. Scuto-pedicel region with deeply W-shaped scutal ridge only slightly less sclerotized near midline, without tubercles. Palpal



Figs. 549–556. *Brignolia sukna*, new species, male. **549.** Carapace, dorsal view. **550.** Same, anterior view. **551.** Same, posterior view. **552.** Cephalothorax, ventral view. **553.** Abdomen, anterior view. **554.** Same, ventral view. **555.** Carapace, lateral view. **556.** Abdomen, lateral view.

bulb tip with translucent ventral extension bearing dorsally curved tip.

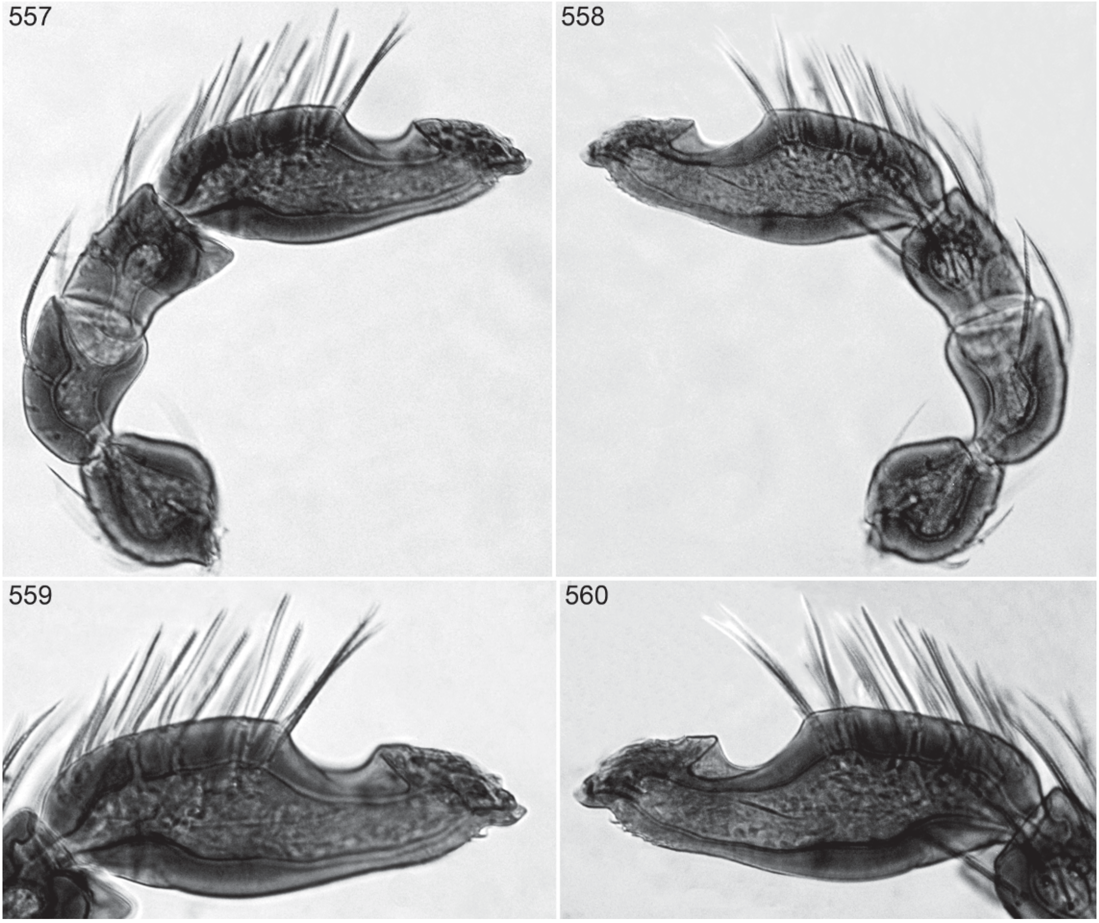
FEMALE: Unknown.

OTHER MATERIAL EXAMINED: **Nepal:** *Nuwakot District:* Trisuli, July 21–22, 1983, forest remnant, elev. 600–650 m (J. Martens, W. Schawaller, NMB PBI_OON 15742), 1♂.

DISTRIBUTION: Northern India and Nepal.

Brignolia ankhu, new species
Figures 611–620

TYPE: Female holotype taken in a forest remnant at an elevation of 650 m at Ankhu Khola Tal, Ankhu Sangu, Dhading Dist., Nepal (July 24–25, 1983; J. Martens, W. Schawaller), deposited in NMB (PBI_OON 15713).



Figs. 557–560. *Brignolia sukna*, new species, male. **557.** Left palp, prolateral view. **558.** Same, retrolateral view. **559.** Left palpal bulb, prolateral view. **560.** Same, retrolateral view.

Etymology: The specific name is a noun in apposition taken from the type locality.

Diagnosis: Females can easily be recognized by the triangular posterior extension on the posterior margin of the epigastric furrow (figs. 619, 620).

Male: Unknown.

Female (PBI_OON 15713, figs. 611–620): Total length 1.82. Carapace pale orange, without any pattern; pars cephalica slightly elevated in lateral view; posterolateral edge without pits, posterior declivity without distinct shoulders, posterior margin rounded. Sternum without pits. Scuto-pedicel region with W-shaped scutal ridge almost straight, without tubercles. Posterior margin of epigastric furrow with posteriorly directed, triangular protrusion; posterior tube posteriorly narrowed, ductlike.

Other Material Examined: None.

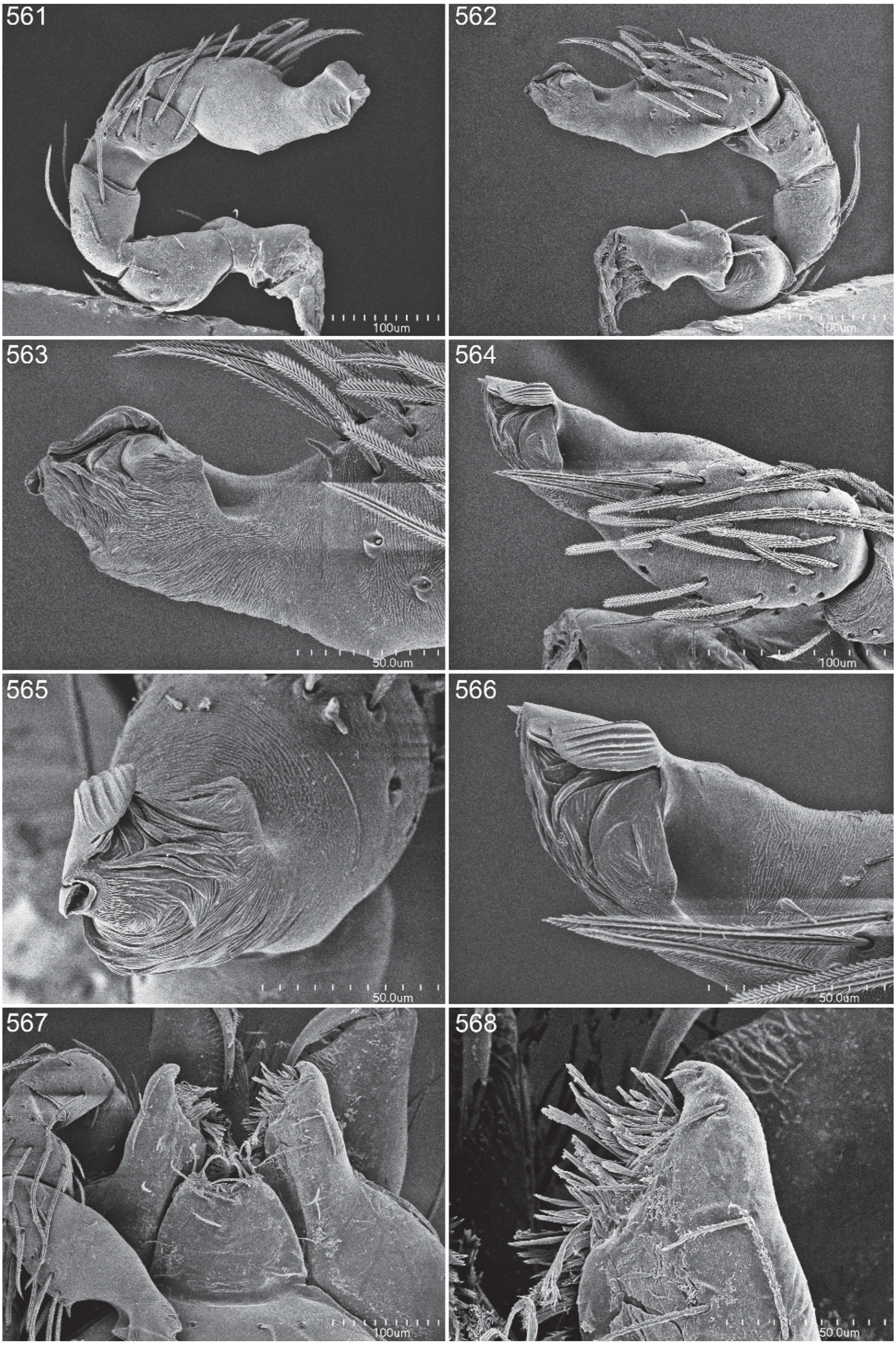
Distribution: Nepal.

Brignolia mapha, new species

Figures 621–630

Type: Female holotype taken at an elevation of 830 m at Pang Mapha, km 133.2 on road from Pai to Mae Hong Song, Chiang Mai Prov., Thailand (Oct. 13, 1995; P. Schwendinger), deposited in MHNG (PBI_OON 12620).

Etymology: The specific name is a noun in apposition taken from the type locality.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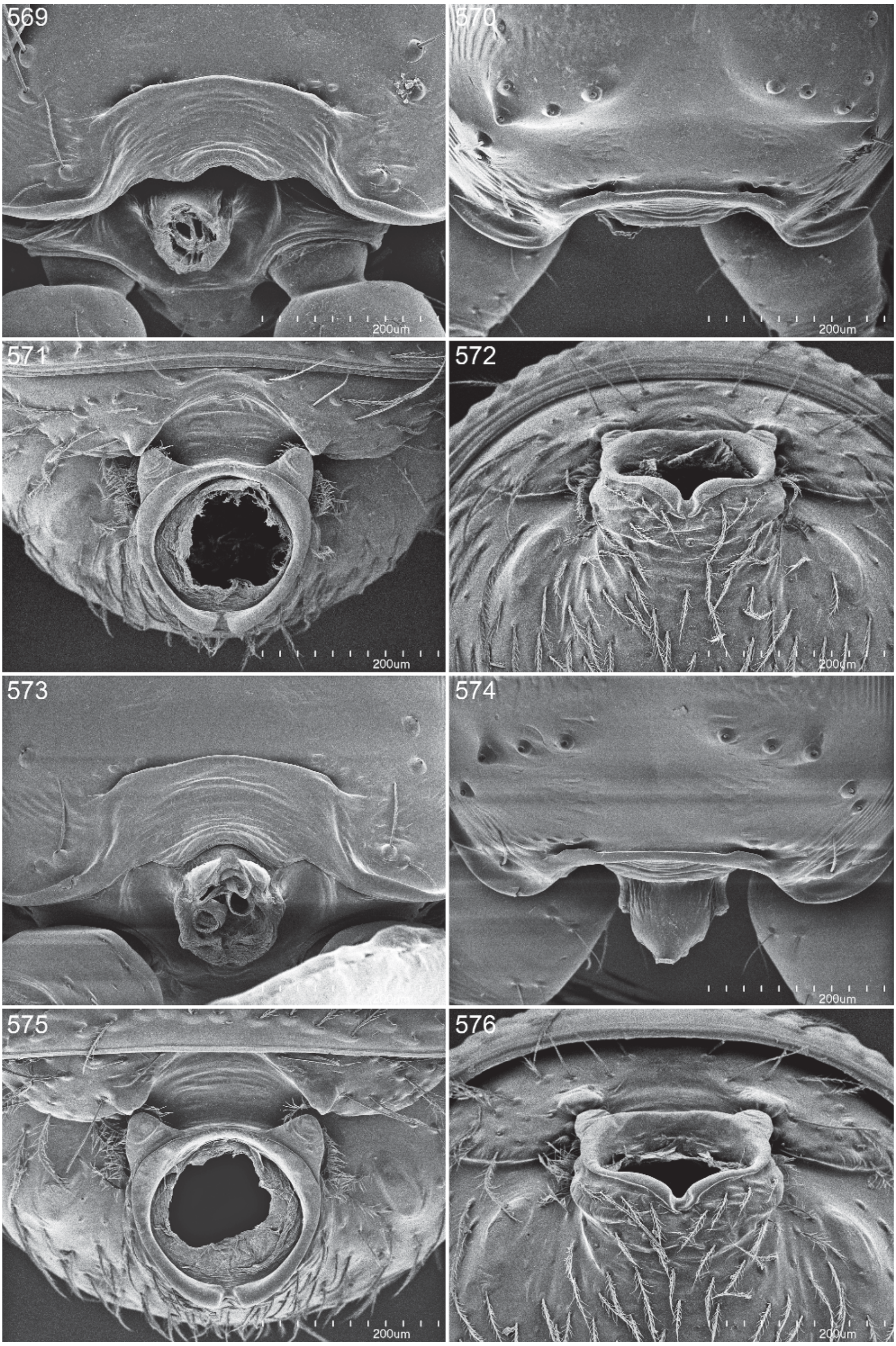
Figs. 561–568. *Brignolia sukna*, new species, male. **561.** Left palp, prolateral view. **562.** Same, retrolateral view. **563.** Left palpal bulb, retrolateral view. **564.** Same, dorsal view. **565.** Same, ventral view. **566.** Embolus, dorsal view. **567.** Labium and endites, ventral view. **568.** Tip of endite, ventral view.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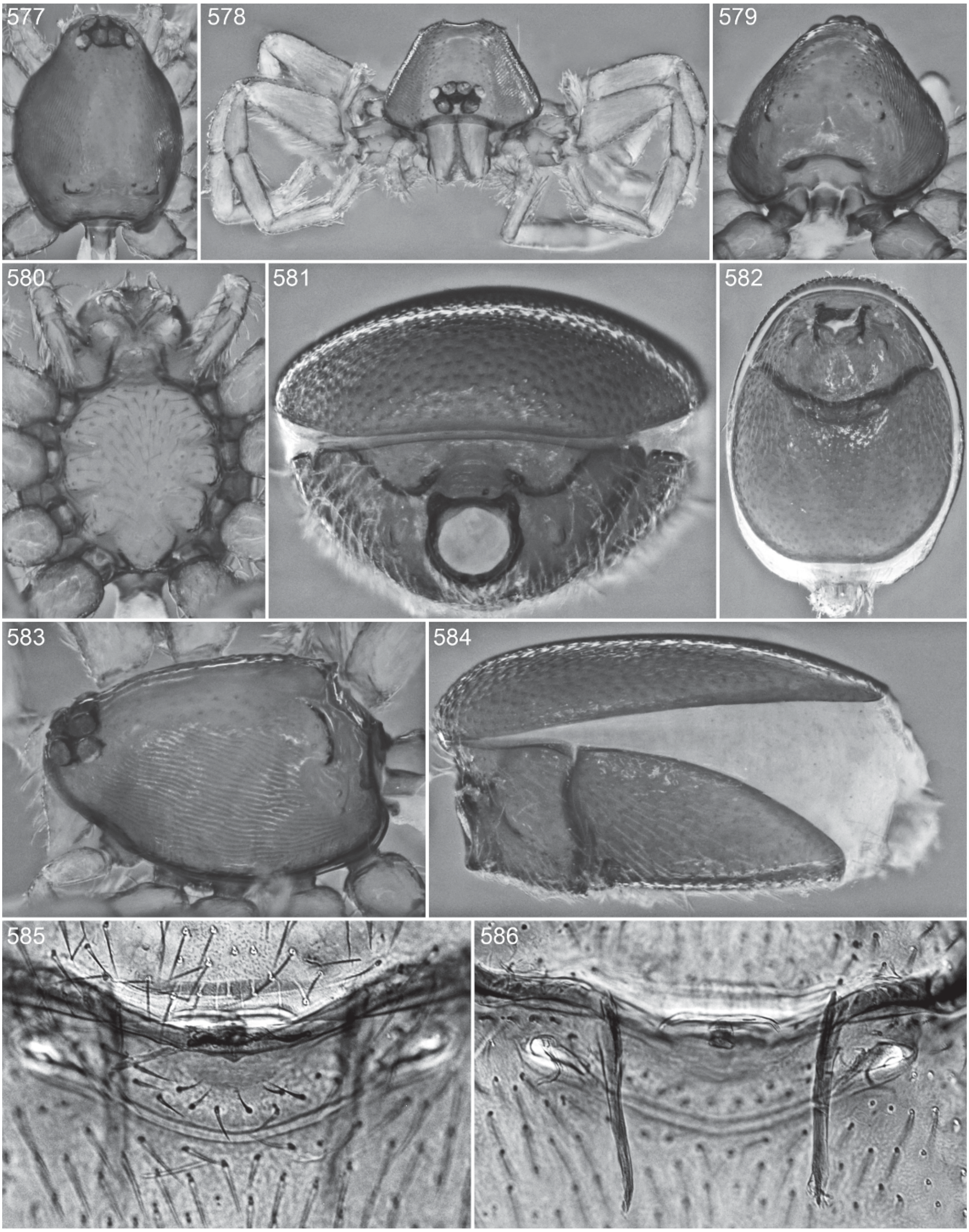
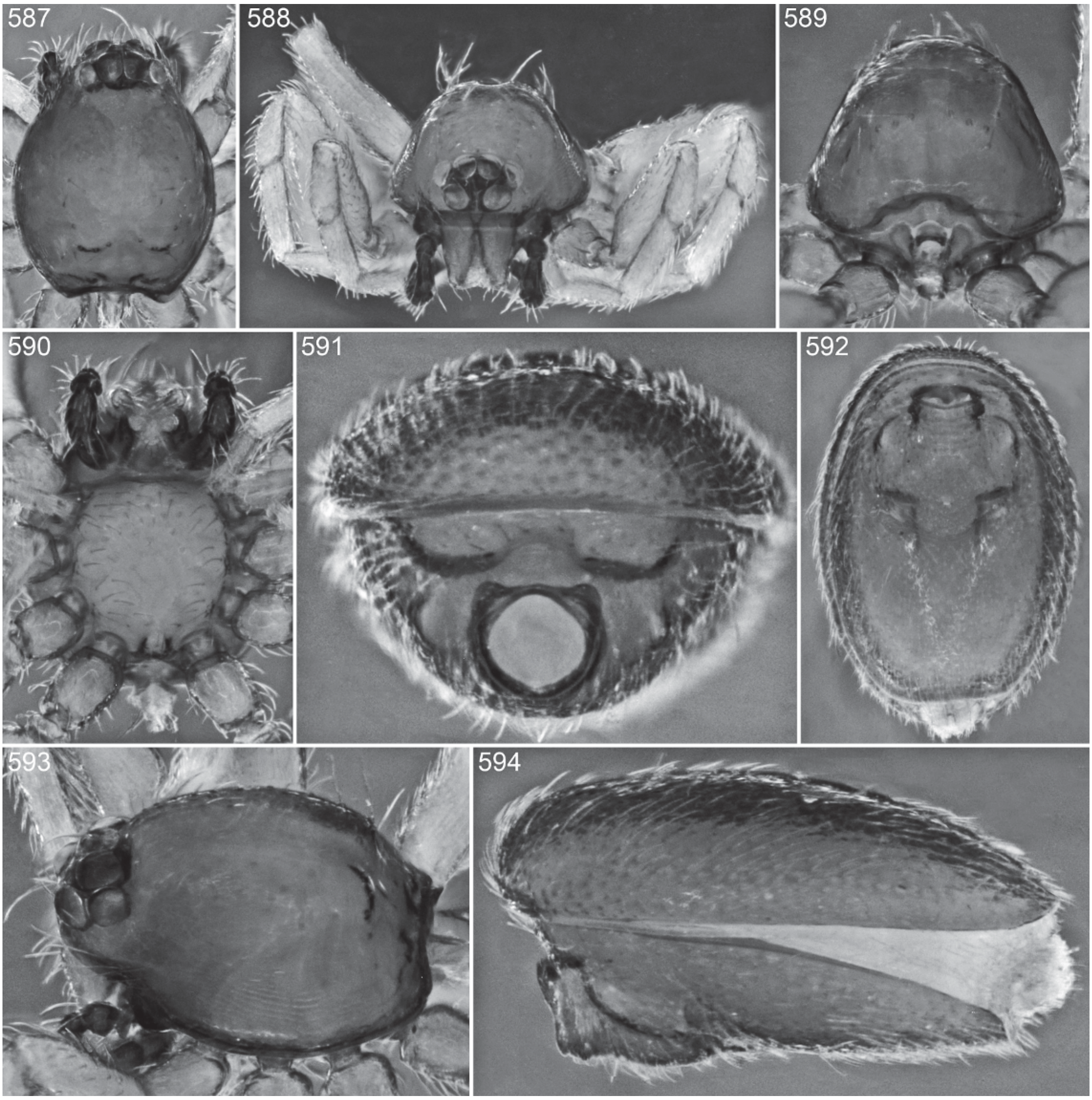
Figs. 569–576. *Brignolia sukna*, new species, male (569–572) and female (573–576). **569, 573**. Carapace, posterior view. **570, 574.** Posterior margin of carapace, dorsal view. **571, 575.** Abdomen, anterior view. **572, 576.** Pedicel tube, ventral view.



Figs. 577–586. *Brignolia sukna*, new species, female. **577.** Carapace, dorsal view. **578.** Same, anterior view. **579.** Same, posterior view. **580.** Cephalothorax, ventral view. **581.** Abdomen, anterior view. **582.** Same, ventral view. **583.** Carapace, lateral view. **584.** Abdomen, lateral view. **585.** Genitalia, ventral view. **586.** Same, dorsal view.

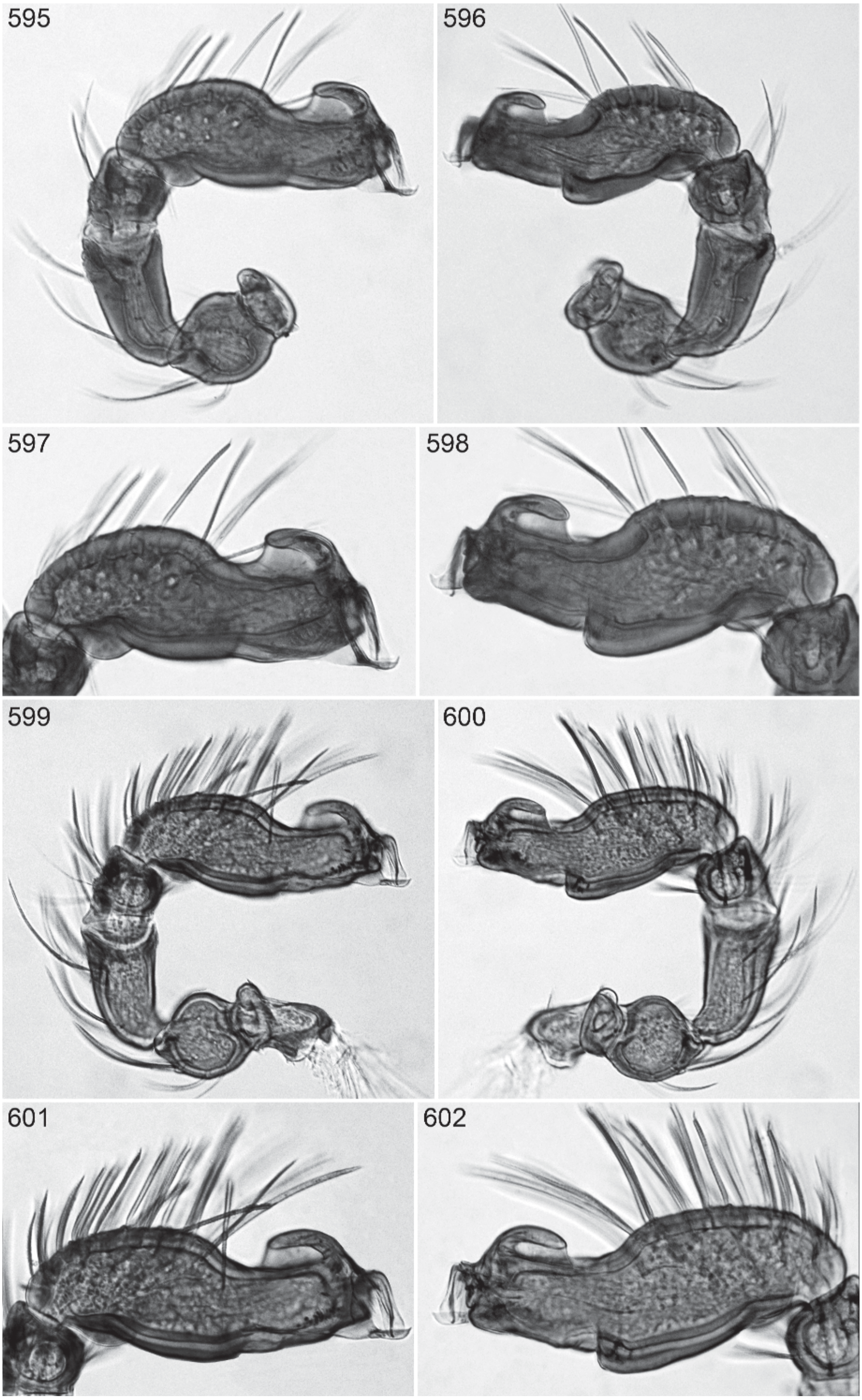


Figs. 587–594. *Brignolia assam*, new species, male. **587.** Carapace, dorsal view. **588.** Same, anterior view. **589.** Same, posterior view. **590.** Cephalothorax, ventral view. **591.** Abdomen, anterior view. **592.** Same, ventral view. **593.** Carapace, lateral view. **594.** Abdomen, lateral view.

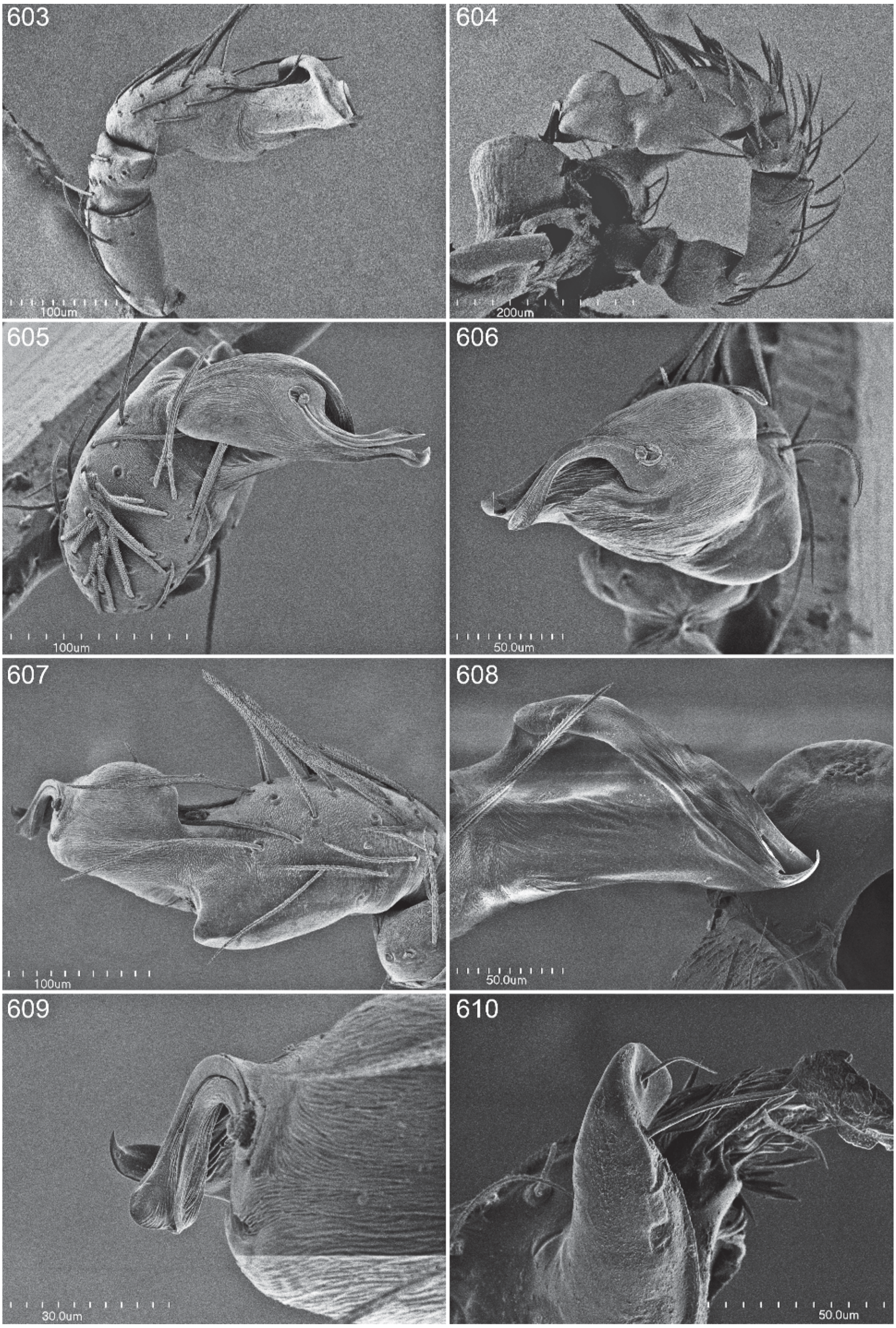
DIAGNOSIS: Females resemble those of *B. cardamom* from southern India but have concave, rather than convex, sides on the triangular anterior extension originating from the posterior spiracular groove (figs. 629, 630).

MALE: Unknown.

FEMALE (PBI_OON 12620, figs. 621–630): Total length 1.87. Carapace pale orange, without any pattern; pars cephalica slightly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity without distinct shoulders, posterior margin rounded. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge almost straight, with weak, secondary, more dorsally situated ridge, without tubercles. Postepigastric region with



Figs. 595–602. *Brignolia assam*, new species, male (top, specimen from India, PBI_OON 12832; bottom, specimen from Nepal, PBI_OON 15742). **595, 599.** Left palp, prolateral view. **596, 600.** Same, retrolateral view. **597, 601.** Left palpal bulb, prolateral view. **598, 602.** Same, retrolateral view.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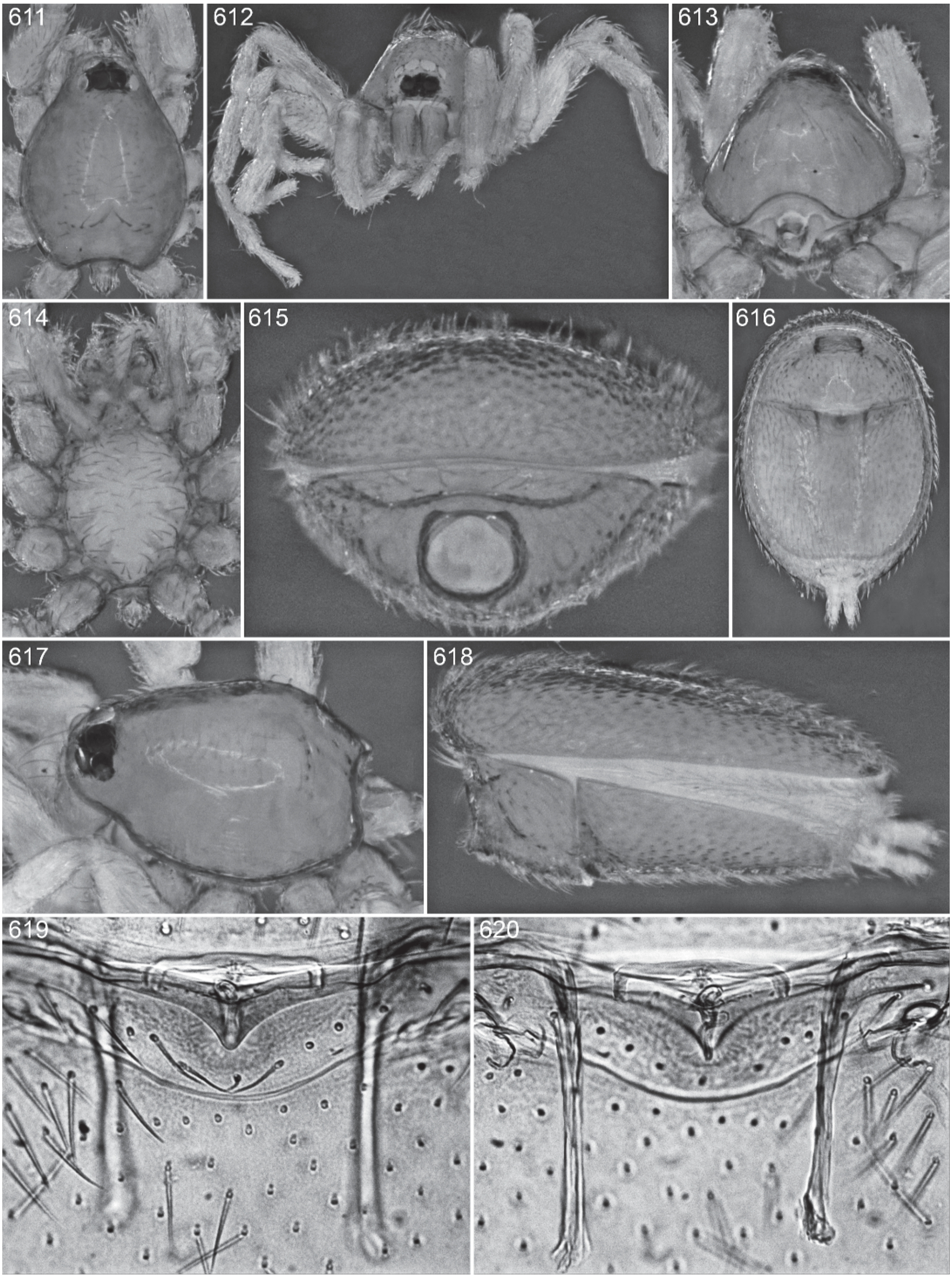
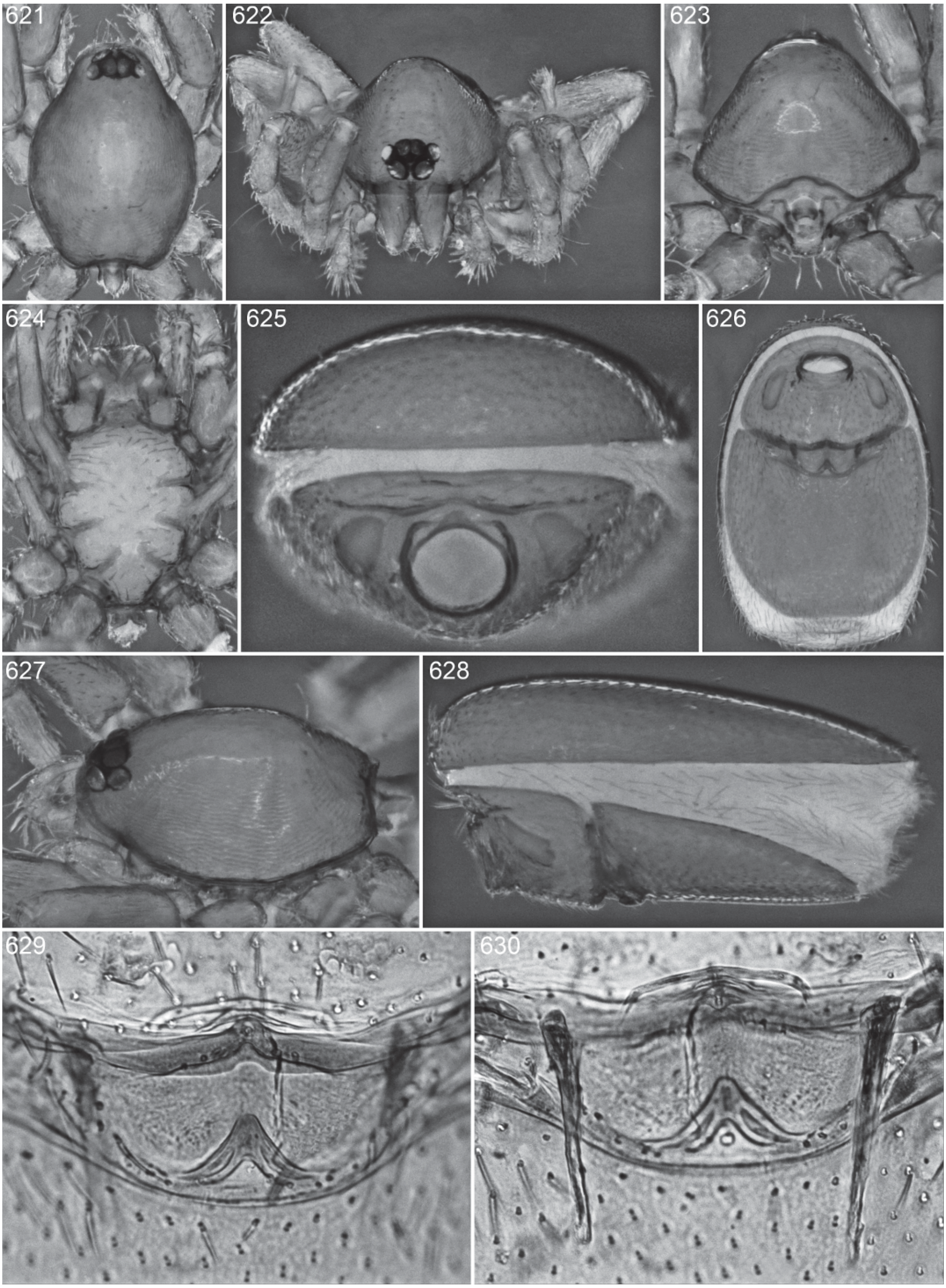
Figs. 603–610. *Brignolia assam*, new species, male (603, 605–607, 609 specimen from India, PBI_OON 12832; 604, 608, specimen from Nepal, PBI_OON 15742). **603.** Left palp, prolateral view. **604.** Same, retrolateral view. **605.** Left palpal bulb, dorsal view. **606.** Same, ventral view. **607.** Same, retrolateral view. **608.** Embolus, prolateral view. **609.** Same, retrolateral view. **610.** Tip of endite, ventral view.



Figs. 611–620. *Brignolia ankhu*, new species, female. **611.** Carapace, dorsal view. **612.** Same, anterior view. **613.** Same, posterior view. **614.** Cephalothorax, ventral view. **615.** Abdomen, anterior view. **616.** Same, ventral view. **617.** Carapace, lateral view. **618.** Abdomen, lateral view. **619.** Genitalia, ventral view. **620.** Same, dorsal view.



Figs. 621–630. *Brignolia mapha*, new species, female. **621.** Carapace, dorsal view. **622.** Same, anterior view. **623.** Same, posterior view. **624.** Cephalothorax, ventral view. **625.** Abdomen, anterior view. **626.** Same, ventral view. **627.** Carapace, lateral view. **628.** Abdomen, lateral view. **629.** Genitalia, ventral view. **630.** Same, dorsal view.

anteriorly directed, triangular, bipartite extension originating near posterior spiracular groove; posterior tube wide.

OTHER MATERIAL EXAMINED: **Thailand:** *Chiang Mai Prov.:* Pai Dist.: Pang Mapha, km 133.2 on road from Pai to Mae Hong Song, Oct. 13, 1995, elev. 830 m (P. Schwendinger, MHNG PBI_OON 12620), 1♀. *Mae Hong Song Prov.:* Tom Lok, 8 km N Mae Lang, Nov. 11–13, 1985, elev. 700 m (D. Burckhardt, I. Löbl, MHNG PBI_OON 12136), 2♀.

DISTRIBUTION: Thailand.

Brignolia suthep, new species

Figures 631–640

TYPE: Female holotype taken in an evergreen hill forest at an elevation of 1180 m at Doi Suthep, Doi Suthep-Pui National Park, Chiang Mai Dist., Chiang Mai Prov., Thailand (Feb. 17, 1995; P. Schwendinger), deposited in MHNG (PBI_OON 12145).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females can be recognized by the bridge-shaped thickening near the posterior spiracular groove and by the short, bell-shaped posterior tube (figs. 639, 640).

MALE: Unknown.

FEMALE (PBI_OON 12145, figs. 631–640): Total length 2.04. Carapace pale orange, without any pattern; pars cephalica slightly elevated; posterolateral edge with pair of pits, posterior declivity without distinct shoulders, posterior margin rounded. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge slightly weakened near midline, without tubercles. Postepigastric area deeply excavated anterior to thickened, W-shaped transverse ridge; posterior tube short, bell-shaped.

OTHER MATERIAL EXAMINED: **Thailand:** *Chiang Mai Prov.:* Chiang Mai Dist.: Doi Suthep, Mar. 30, 1987, pitfall, elev. 1180 m (P. Schwendinger, MHNG PBI_OON 12697), 1♀.

DISTRIBUTION: Thailand.

Brignolia diablo, new species

Figures 641–650

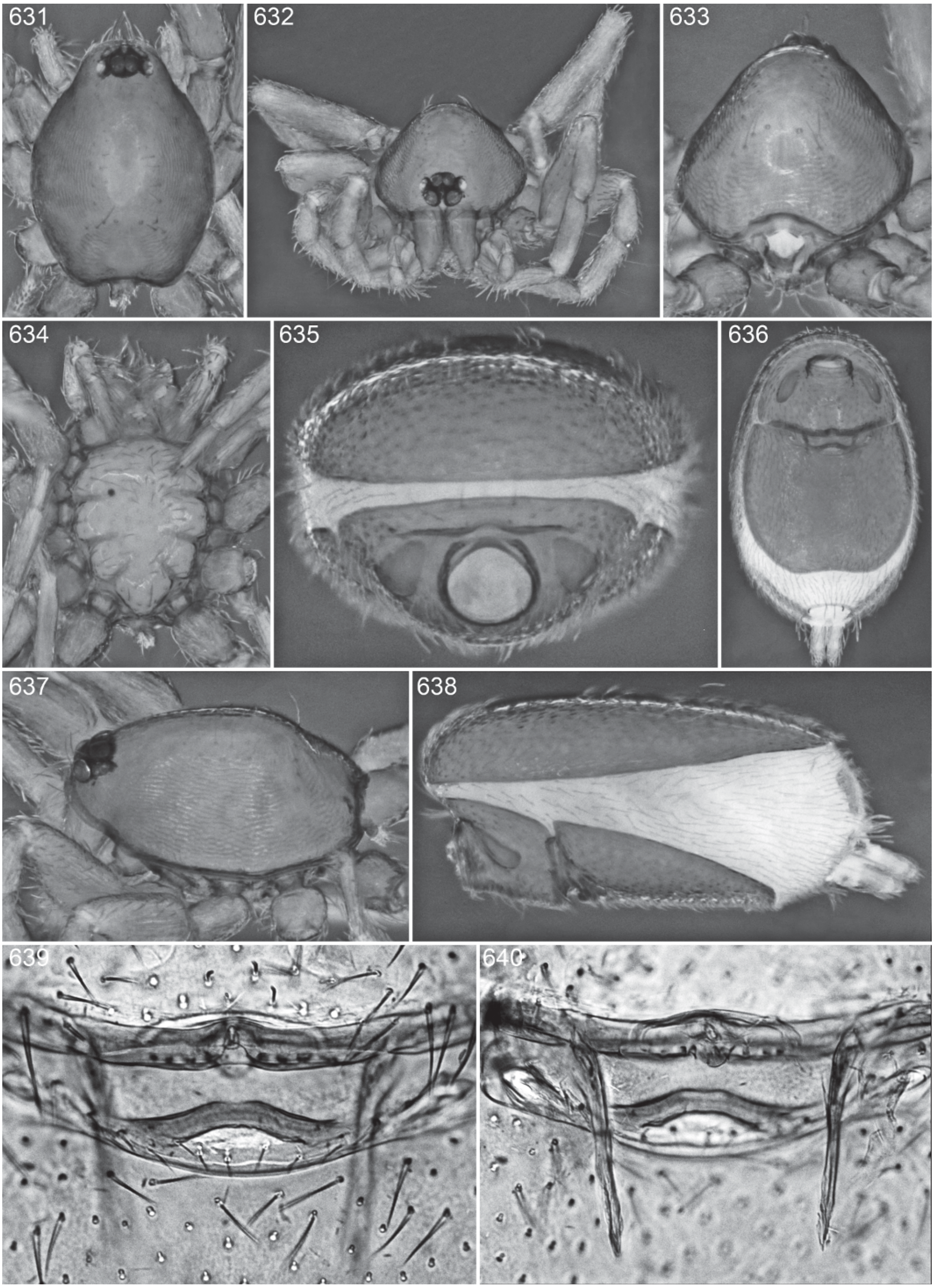
TYPE: Female holotype taken in bamboo thicket in Nam Nao National Park, Phetchabun Prov., Thailand (Nov. 19, 1976; P. Lehtinen), deposited in ZMUT (PBI_OON 15972).

ETYMOLOGY: The specific name is a noun in apposition taken from the Spanish for devil, and refers to the horned carapace.

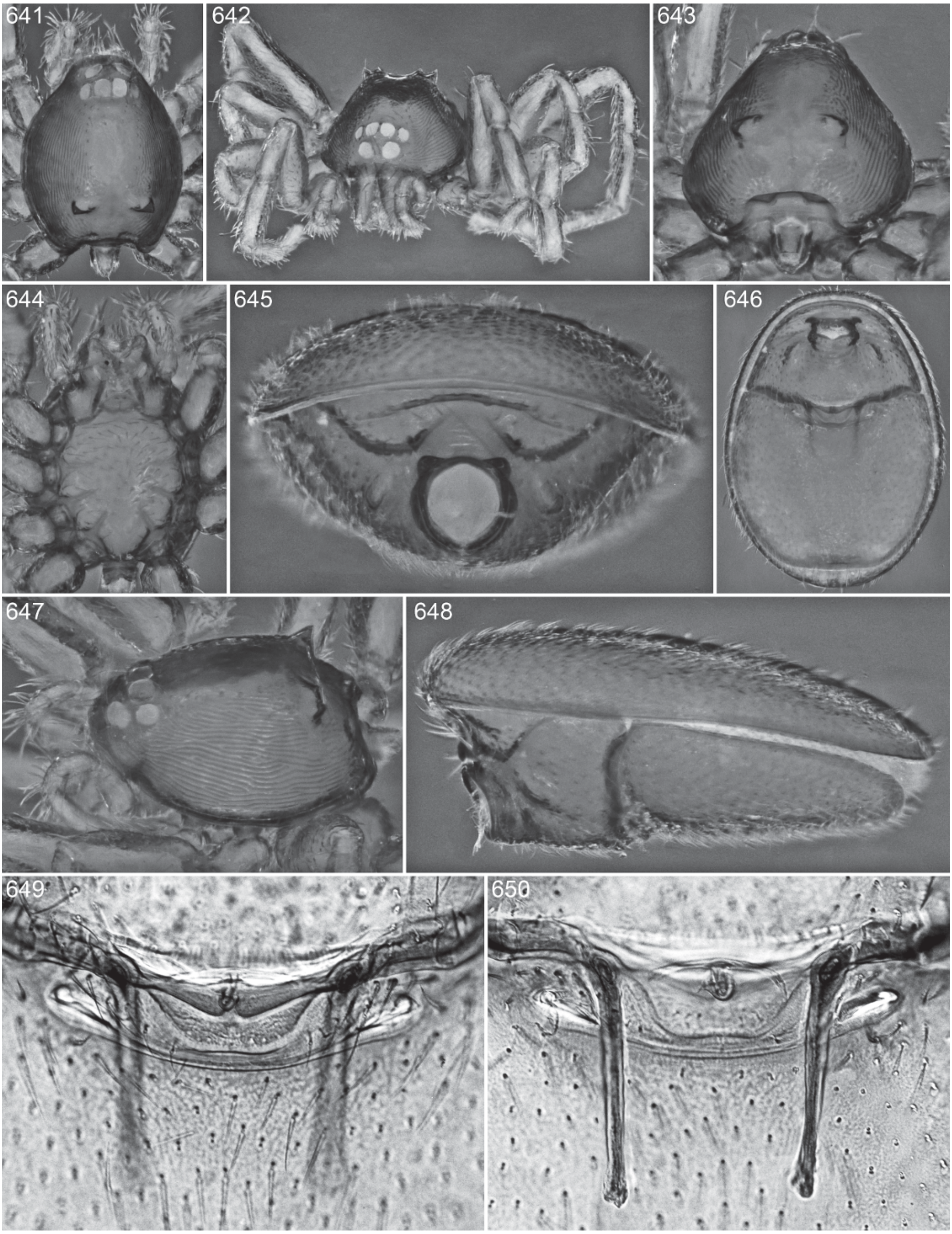
DIAGNOSIS: Females can easily be recognized by the enlargements of the tubercles on the high shoulders of the carapace, which form hornlike ornaments (figs. 641–643, 647). In this respect they resemble four species of *Opopaea* found in southern China that were discussed by Tong and Li (2010). While it is possible that discovery of the male of this species may show that it also belongs to *Opopaea* rather than *Brignolia*, the easily observable carapace pits (fig. 641) and the associated lateral sclerotizations of the posterior carapace margin (fig. 643), along with the apparent posterior tube in the female genitalia (fig. 650), suggest that the male will likely have a *Brignolia*-type palp. Yanfeng Tong has been kind enough to examine females of one of those Chinese horned species, *Opopaea cornuta* Yin and Wang (1984), and has confirmed that they have lateral sclerotizations of the posterior carapace margin similar to those of *B. diablo*. However, we do not believe the specimens can be conspecific, as the Thailand female has a clypeus that is only slightly higher than the AME diameter, whereas in *O. cornuta* the clypeus is more than 2.5 times that height (Tong and Li, 2010, fig. 1K).

MALE: Unknown.

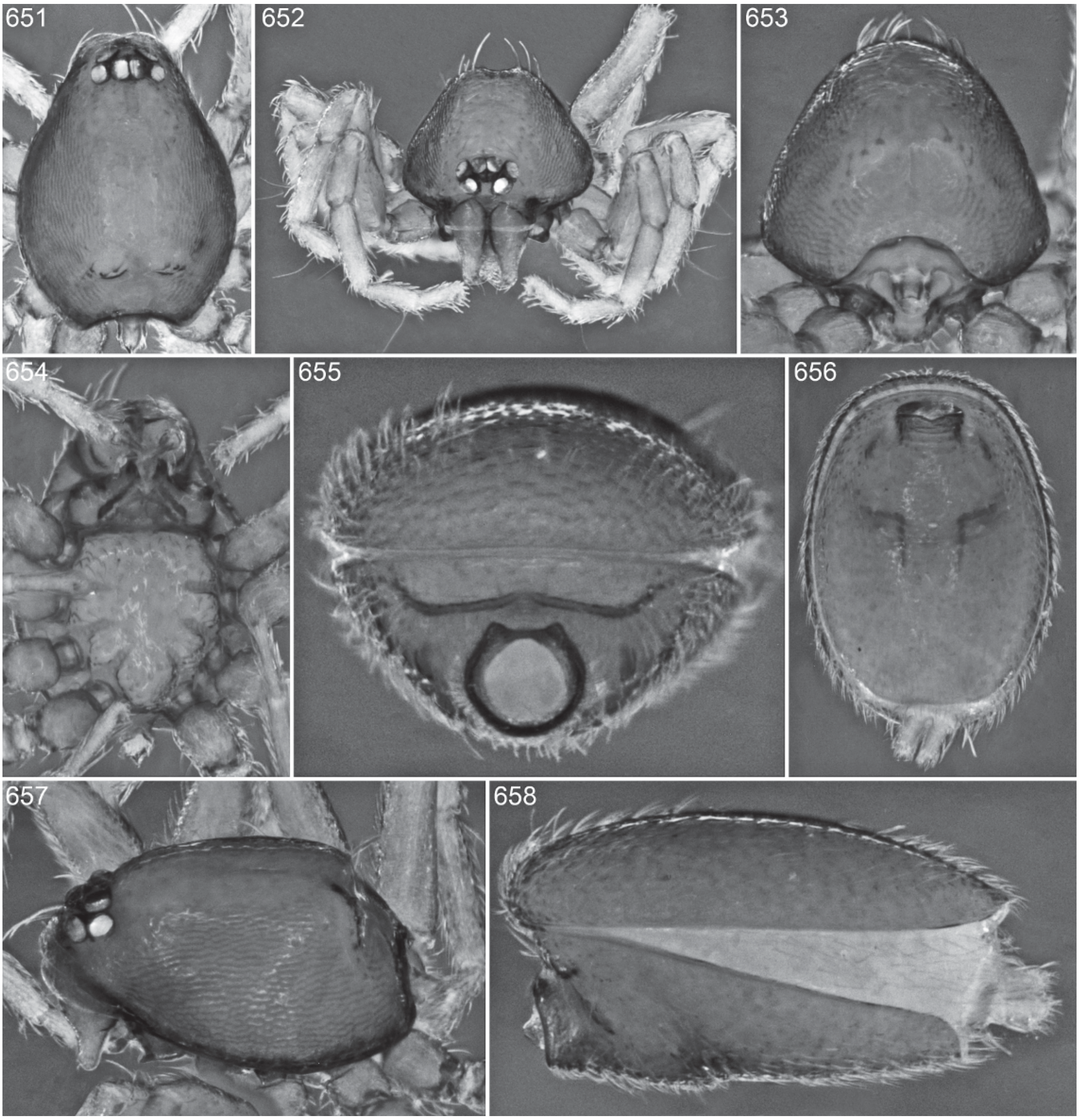
FEMALE (PBI_OON 15972, figs. 641–650): Total length 2.14. Carapace pale orange, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with hornlike projection on each side, each projection with small tubercle on median side, posterior margin squared, with diamond-shaped slcerotization on each side. Sternum without pits, with elevated posterior margin. Scuto-pedicel region with deeply W-shaped scutal ridge so weakly sclerotized near midline as to appear like two V-shaped ridges, each with sharply pointed tubercle opposite pedicel triangle and additional, strong, more dorsally situated ridge. Postepigastric region with broadly U-shaped ridge occupying most of space between



Figs. 631–640. *Brignolia suthep*, new species, female. **631.** Carapace, dorsal view. **632.** Same, anterior view. **633.** Same, posterior view. **634.** Cephalothorax, ventral view. **635.** Abdomen, anterior view. **636.** Same, ventral view. **637.** Carapace, lateral view. **638.** Abdomen, lateral view. **639.** Genitalia, ventral view. **640.** Same, dorsal view.



Figs. 641–650. *Brignolia diablo*, new species, female. **641.** Carapace, dorsal view. **642.** Same, anterior view. **643.** Same, posterior view. **644.** Cephalothorax, ventral view. **645.** Abdomen, anterior view. **646.** Same, ventral view. **647.** Carapace, lateral view. **648.** Abdomen, lateral view. **649.** Genitalia, ventral view. **650.** Same, dorsal view.



Figs. 651–658. *Brignolia chumphae*, new species, male. **651.** Carapace, dorsal view. **652.** Same, anterior view. **653.** Same, posterior view. **654.** Cephalothorax, ventral view. **655.** Abdomen, anterior view. **656.** Same, ventral view. **657.** Carapace, lateral view. **658.** Abdomen, lateral view.

epigastric furrow and posterior spiracular groove; posterior tube short, rounded.

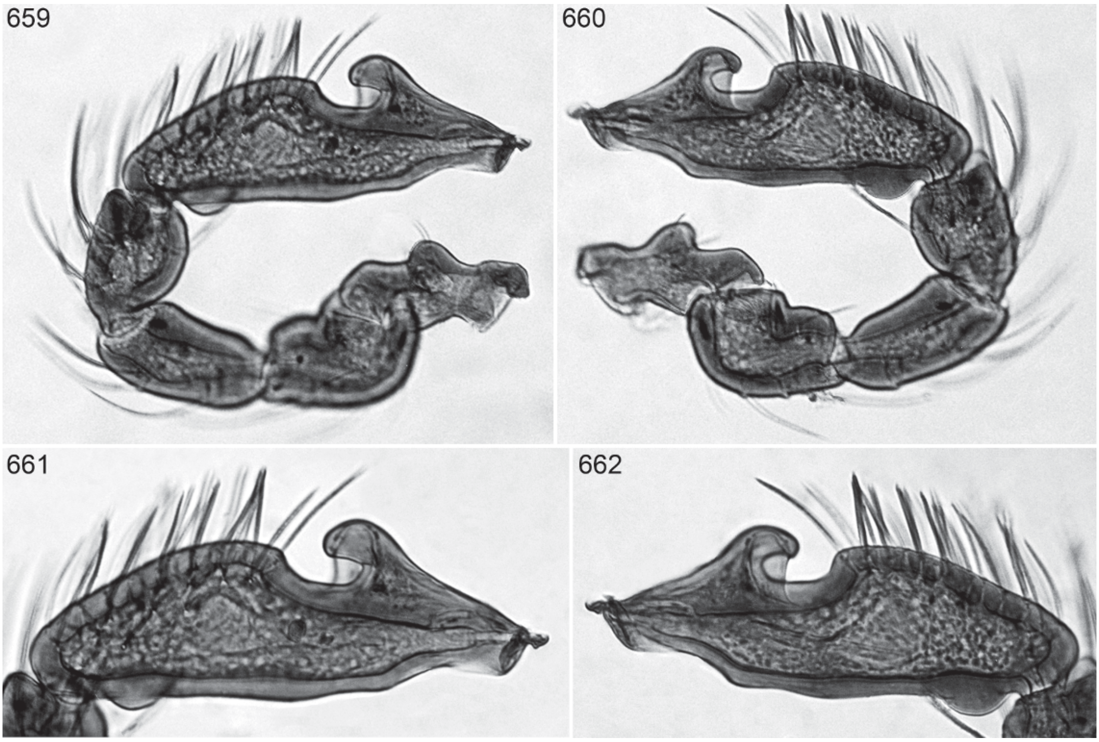
OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Thailand.

Brignolia chumphae, new species
Figures 651–668

TYPE: Male holotype taken by sifting in a mixed deciduous forest at an elevation of 300 m in front of Tham (cave) Phiang Din, near road from Chumphae to Phu Kradung at km 122, Phu Pha Man National Park, Khon Kaen Prov., Thailand (July 24, 2000; P. Schwendinger), deposited in MHNG (PBI_OON 12550).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.



Figs. 659–662. *Brignolia chumphae*, new species, male. **659.** Left palp, prolateral view. **660.** Same, retrolateral view. **661.** Left palpal bulb, prolateral view. **662.** Same, retrolateral view.

Diagnosis: Males resemble those of *B. assam* but have the distalmost portion of the palpal bulb situated more dorsally than in that species (figs. 659–668).

Male (PBI_OON 12550, figs. 651–668): Total length 1.74. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders but tubercles not enlarged, posterior margin squared, with pair of lateral sclerotizations. Sternum covered with small round pits. Scuto-pedicel region with W-shaped scutal ridge almost straight, without tubercles. Palpal bulb with basal ventral enlargement and proximally directed dorsal expansion.

Female: Unknown.

Other Material Examined: None.

Distribution: Thailand.

Brignolia schwendingeri, new species

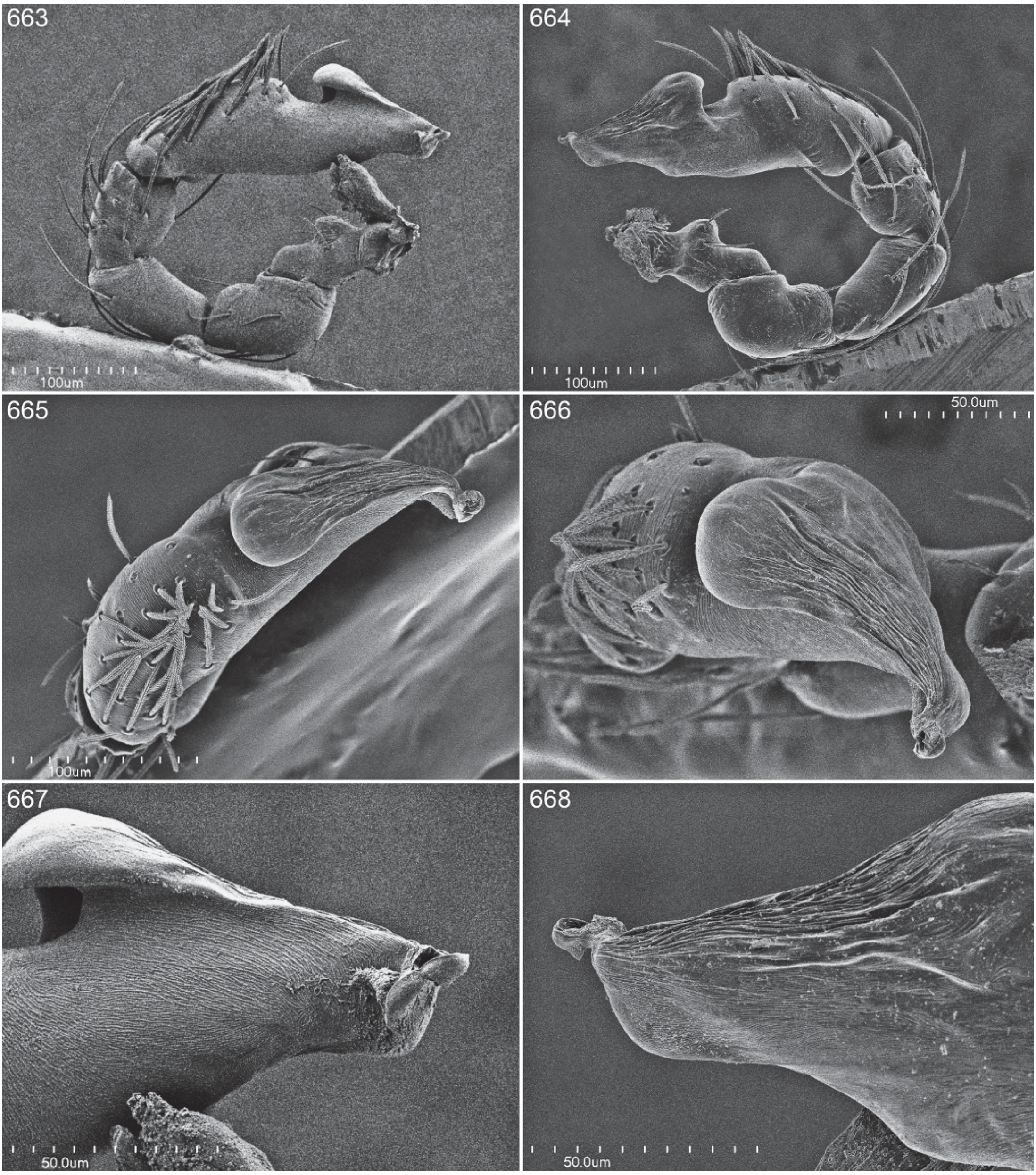
Figures 669–680

Type: Male holotype taken in evergreen rainforest between headquarters and Mr. Dong redwood tree at an elev. 130 m in Cat Tien National Park, 25 km NW Tan Phu, 11°25′22.3″N, 107°25′42.5″E, Dong Nai Prov., Vietnam (Aug. 26–29, 2003; P. Schwendinger), deposited in MHNG (PBI_OON 15538).

Etymology: The specific name is a patronym in honor of the collector of the holotype and many other unusual oonopids.

Diagnosis: Males can easily be recognized by the angular dorsal depression on the palpal bulb (figs. 677–680).

Male (PBI_OON 15538, figs. 669–680): Total length 1.20. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, tubercles slightly enlarged, posterior margin squared, with two long, tubular sclerotizations. Sternum covered with large round pits, with distinct, W-shaped posterior ridge. Scuto-pedicel region with sinuous, W-shaped scutal ridge less sclerotized medially than laterally, without tuber-



Figs. 663–668. *Brignolia chumphae*, new species, male. **663.** Left palp, prolateral view. **664.** Same, retrolateral view. **665.** Left palpal bulb, dorsal view. **666.** Same, ventral view. **667.** Embolus, prolateral view. **668.** Same, retrolateral view.

cles. Palpal bulb abruptly narrowed at about two-thirds its length.

FEMALE: Unknown.

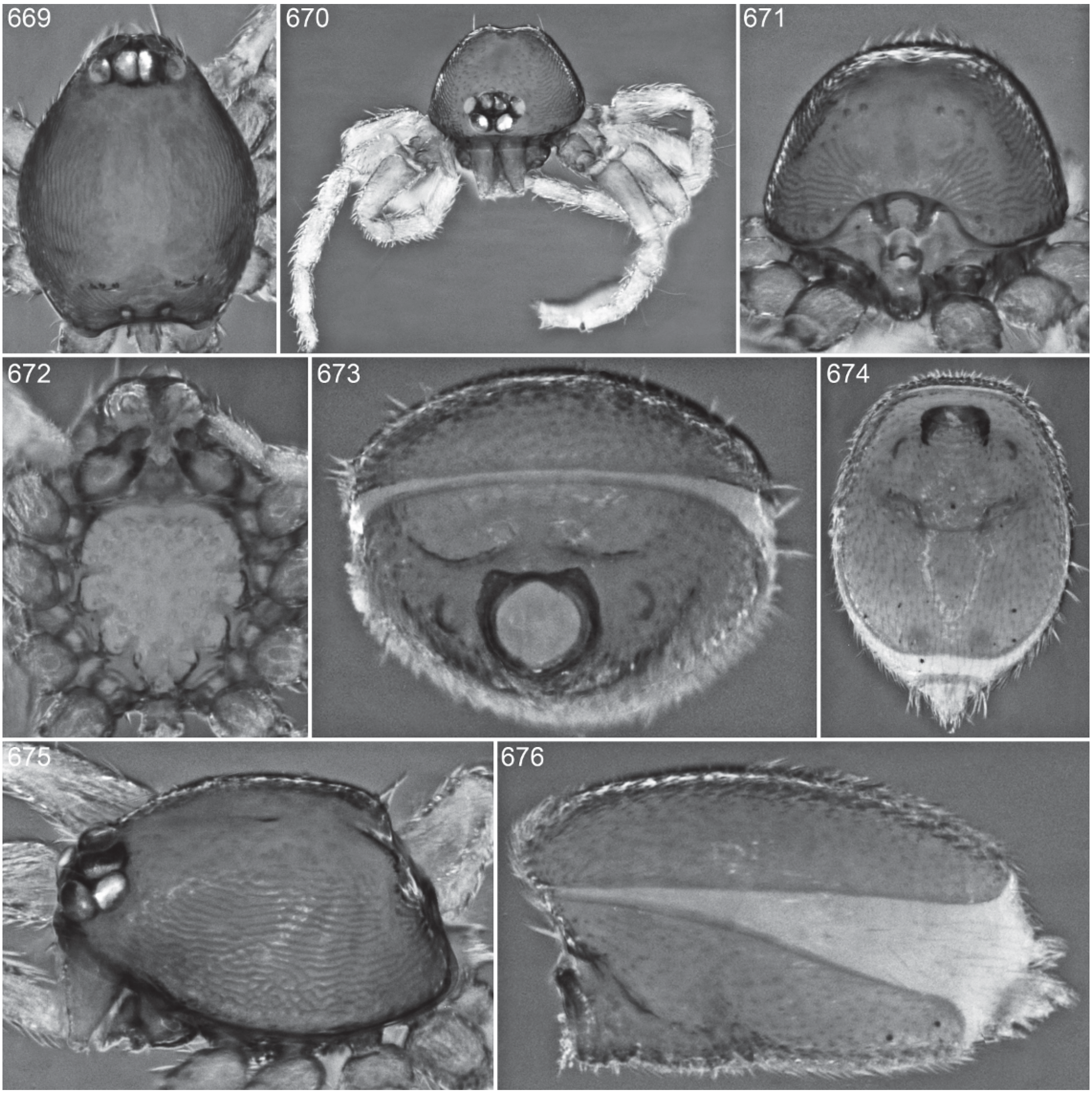
OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Vietnam.

Brignolia palawan, new species

Figures 681–690

TYPE: Female holotype from Puerco Island, Palawan, Philippines (Mar. 1994; T.



Figs. 669–676. *Brignolia schwendingeri*, new species, male. **669.** Carapace, dorsal view. **670.** Same, anterior view. **671.** Same, posterior view. **672.** Cephalothorax, ventral view. **673.** Abdomen, anterior view. **674.** Same, ventral view. **675.** Carapace, lateral view. **676.** Abdomen, lateral view.

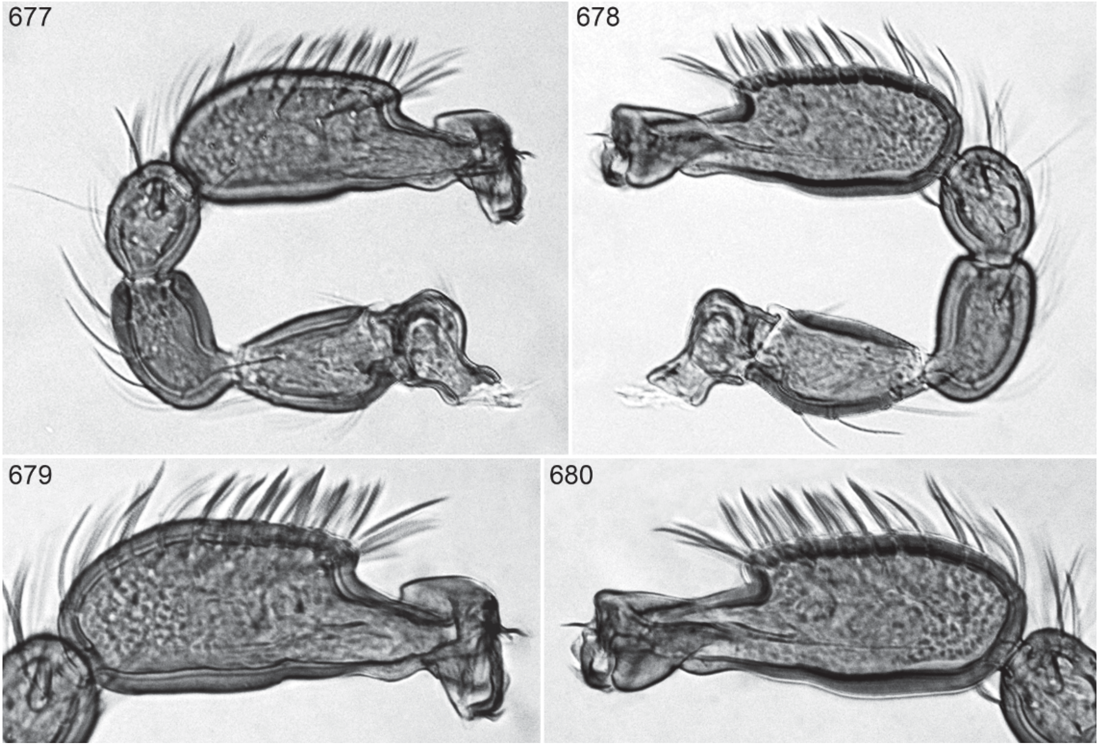
Jacoud), deposited in MHNG (PBI_OON 12544).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

DIAGNOSIS: Females resemble those of *B. dasysterna*, but have the posterior tube straighter and followed posteriorly by a transverse ridge situated anteriorly of the posterior spiracular groove (figs. 689, 690)

MALE: Unknown

FEMALE (PBI_OON 12544, figs. 681–690): Total length 1.46. Carapace pale orange, without any pattern; pars cephalica slightly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity without shoulders, posterior margin rounded, with pair of lateral sclerotizations. Sternum without pits. Scuto-pedicel region with W-shaped scutal ridge almost straight, without tubercles but with secondary, more



Figs. 677–680. *Brignolia schwendingeri*, new species, male. **677.** Left palp, prolateral view. **678.** Same, retrolateral view. **679.** Left palpal bulb, prolateral view. **680.** Same, retrolateral view.

dorsally situated ridge. Postepigstric region semicircular posterior ridge situated anterior of posterior spiracular groove; posterior tube long, basally twisted.

OTHER MATERIAL EXAMINED: None.

DISTRIBUTION: Philippine Islands.

Brignolia gading, new species
Figures 691–724

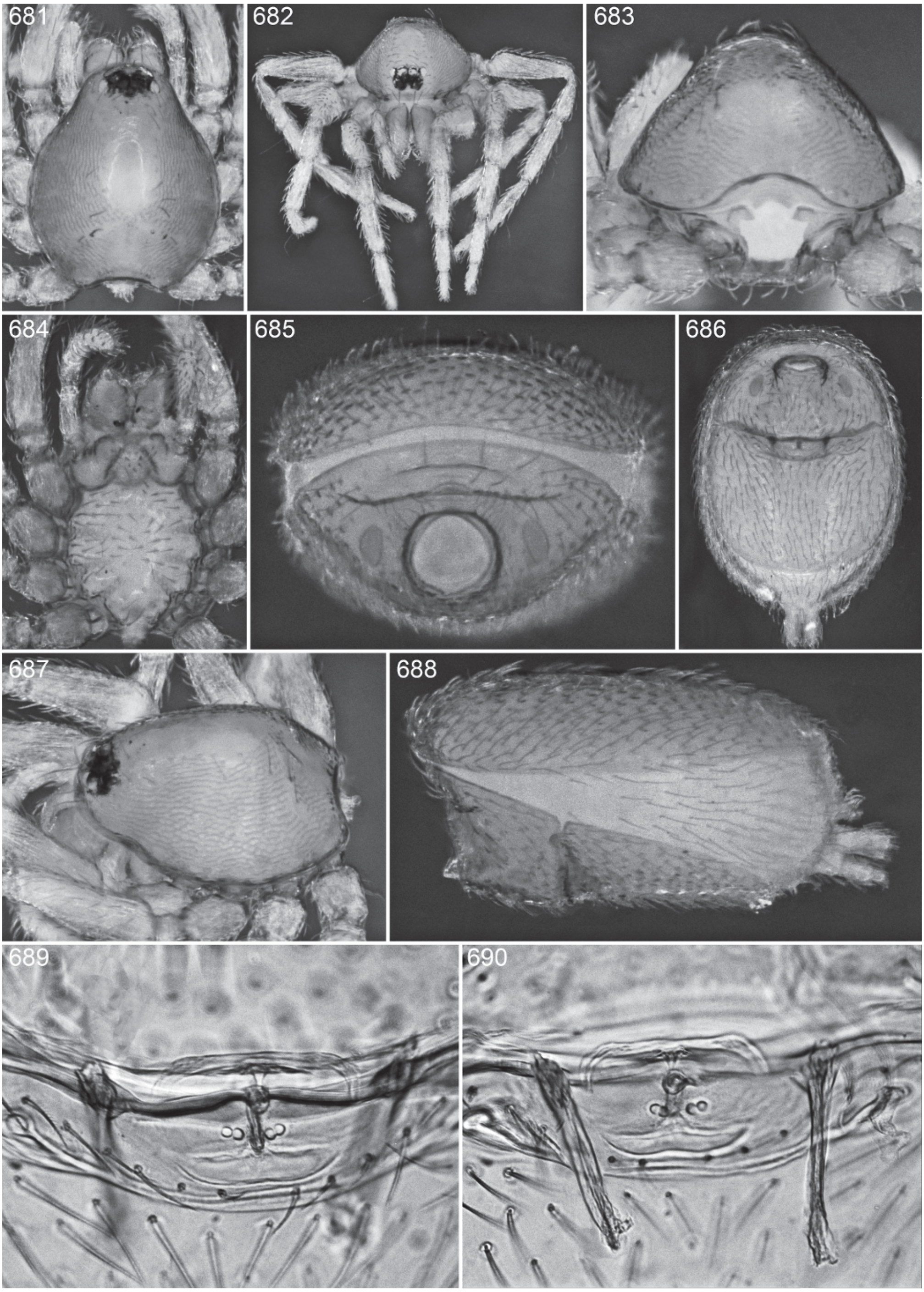
TYPES: Male holotype and female allotype taken in primary forest at an elevation of 600–800 m in Gunung Gading National Park, near Lundu, 1°42′50″N, 109°50′09″E, Sarawak (May 28, 2007; A. Schultz), deposited in MHNG (PBI_OON 16090).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

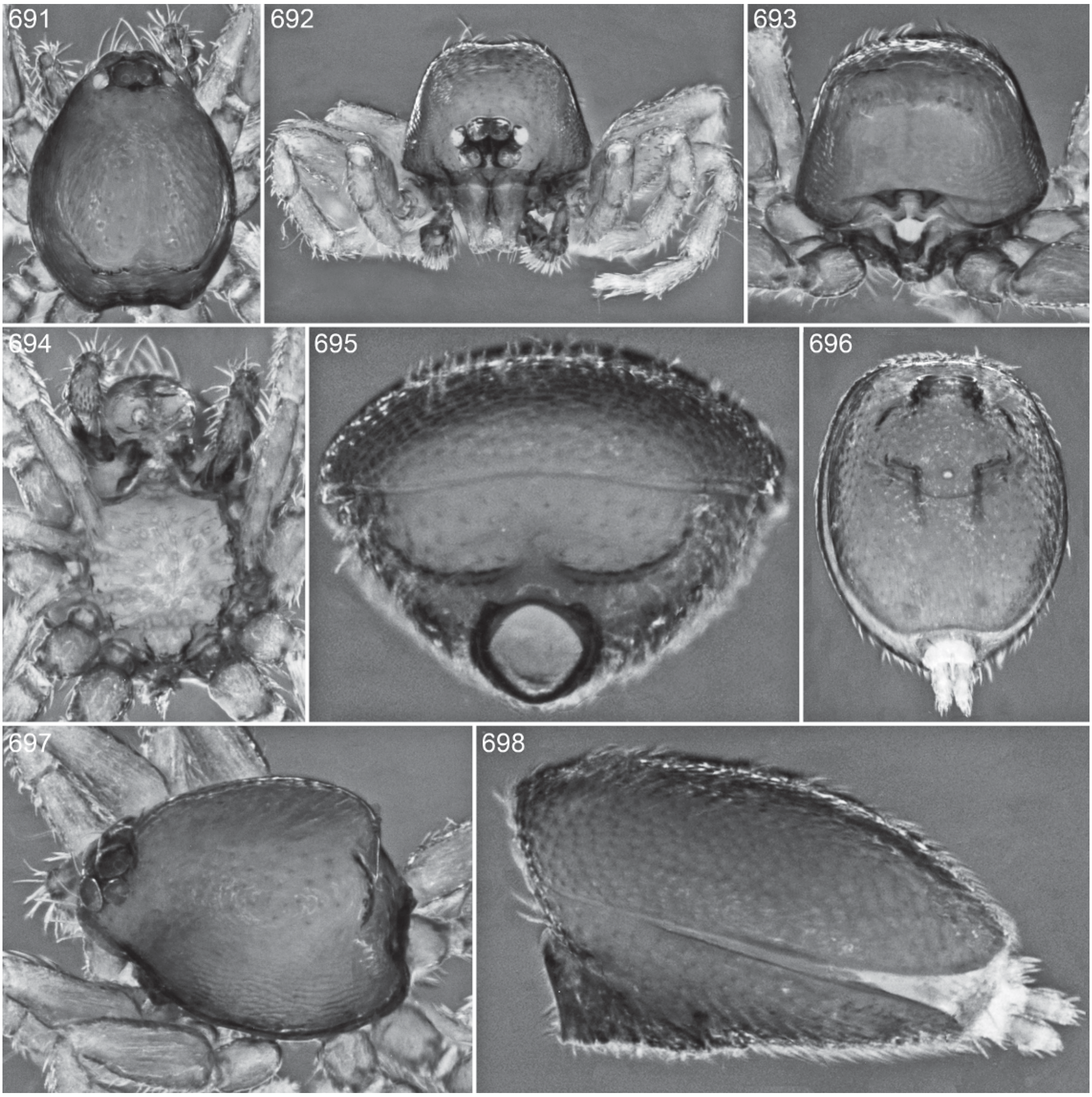
DIAGNOSIS: Males can easily be recognized by the horn-shaped dorsal protuberance on the palpal bulb (figs. 699–704), females by the tiny epigastric scape protruding from the posterior margin of the epigastric furrow (figs. 723, 724).

MALE (PBI_OON 16090, figs. 691–711): Total length 1.36. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders but tubercles not enlarged, posterior margin squared, with two dark triangular sclerotizations. Sternum covered with large round pits, with distinct U-shaped posterior ridge. Scuto-pedicel region with W-shaped scutal ridge divided into two rounded halves, each with transverse row of small tubercles opposite pedicel triangles. Palpal bulb abruptly narrowed basal to long, recurved horn-shaped dorsal lobe, with prolateral spike at tip.

FEMALE (PBI_OON 16090, figs. 712–724): Total length 1.37. Postepigastric region with short, narrow epigastric scape anterior of deeply depressed atrium, atrium bordered



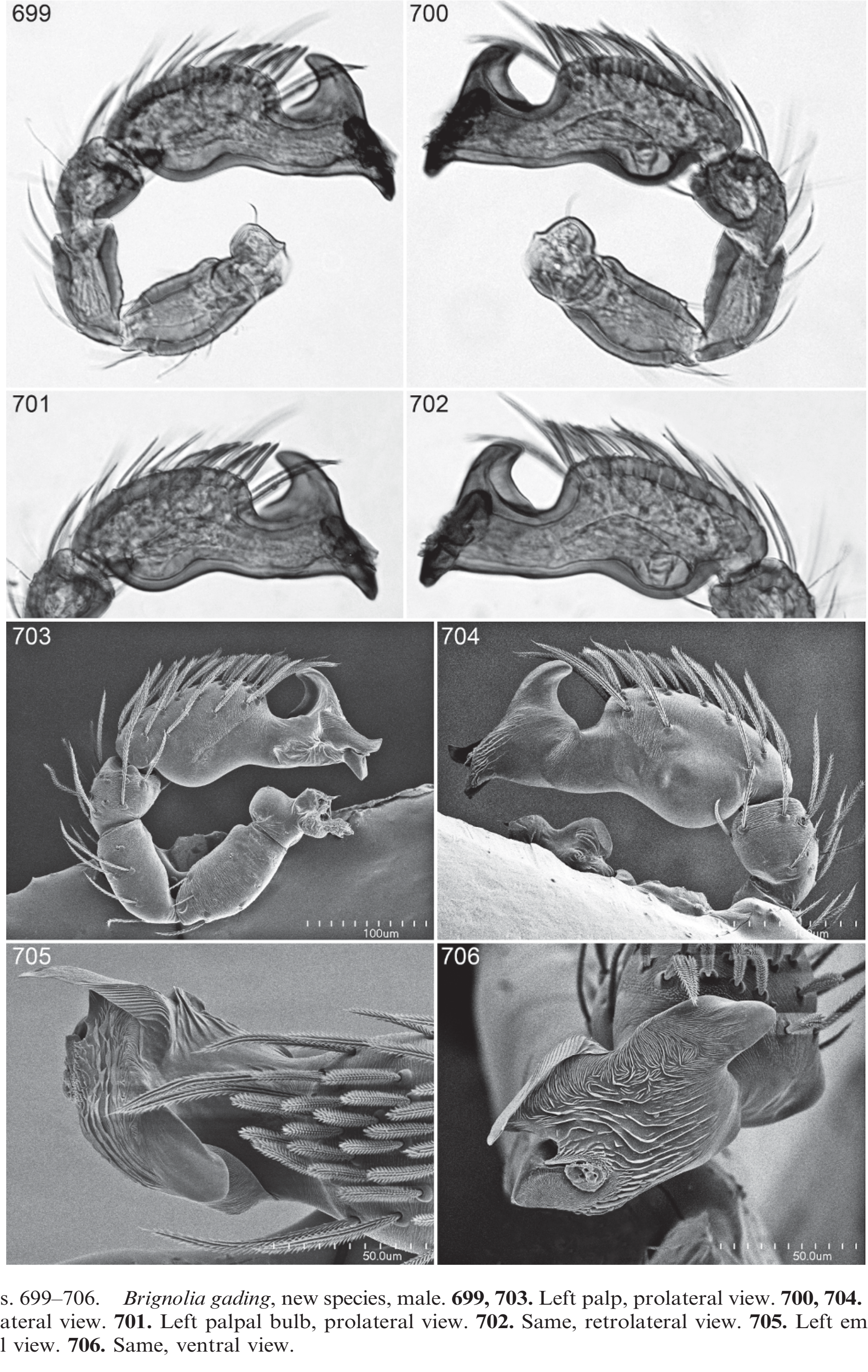
Figs. 681–690. *Brignolia palawan*, new species, female. **681.** Carapace, dorsal view. **682.** Same, anterior view. **683.** Same, posterior view. **684.** Cephalothorax, ventral view. **685.** Abdomen, anterior view. **686.** Same, ventral view. **687.** Carapace, lateral view. **688.** Abdomen, lateral view. **689.** Genitalia, ventral view. **690.** Same, dorsal view.



Figs. 691–698. *Brignolia gading*, new species, male. **691.** Carapace, dorsal view. **692.** Same, anterior view. **693.** Same, posterior view. **694.** Cephalothorax, ventral view. **695.** Abdomen, anterior view. **696.** Same, ventral view. **697.** Carapace, lateral view. **698.** Abdomen, lateral view.

posteriorly by anteriorly directed, triangular protrusion originating near posterior spiracular groove; posterior tube relatively short, triangular.

OTHER MATERIAL EXAMINED: BORNEO: **Sarawak:** Gunung Gading National Park, near Lundu, 1°41′17″N, 109°51′05″E, May 30–June 1, 2007, primary forest, elev. 250–500 m (A. Schultz, MHNG PBI_OON 46494), 3♂, 4♀; Gunung Gading National Park, near Lundu, 1°42′50″N, 109°50′09″E, May 28, 2007, primary forest, elev. 600–800 m (A. Schultz, MHNG PBI_OON 16090), 1♂, 5♀; Santubong, 20 km N Kuching, Camp Permai, 1°46′N, 110°19′E, Aug. 5–10, 2003, Winkler trap, elev. 10 m (A. Schultz, MHNG PBI_OON 15463), 3♂, 2♀; Santubong, 32 km N Kuching, May 11–16, 1994, sifting vegetational debris and fungi in mixed dipterocarp forest, elev. 0–100 m (I. Löbl, D.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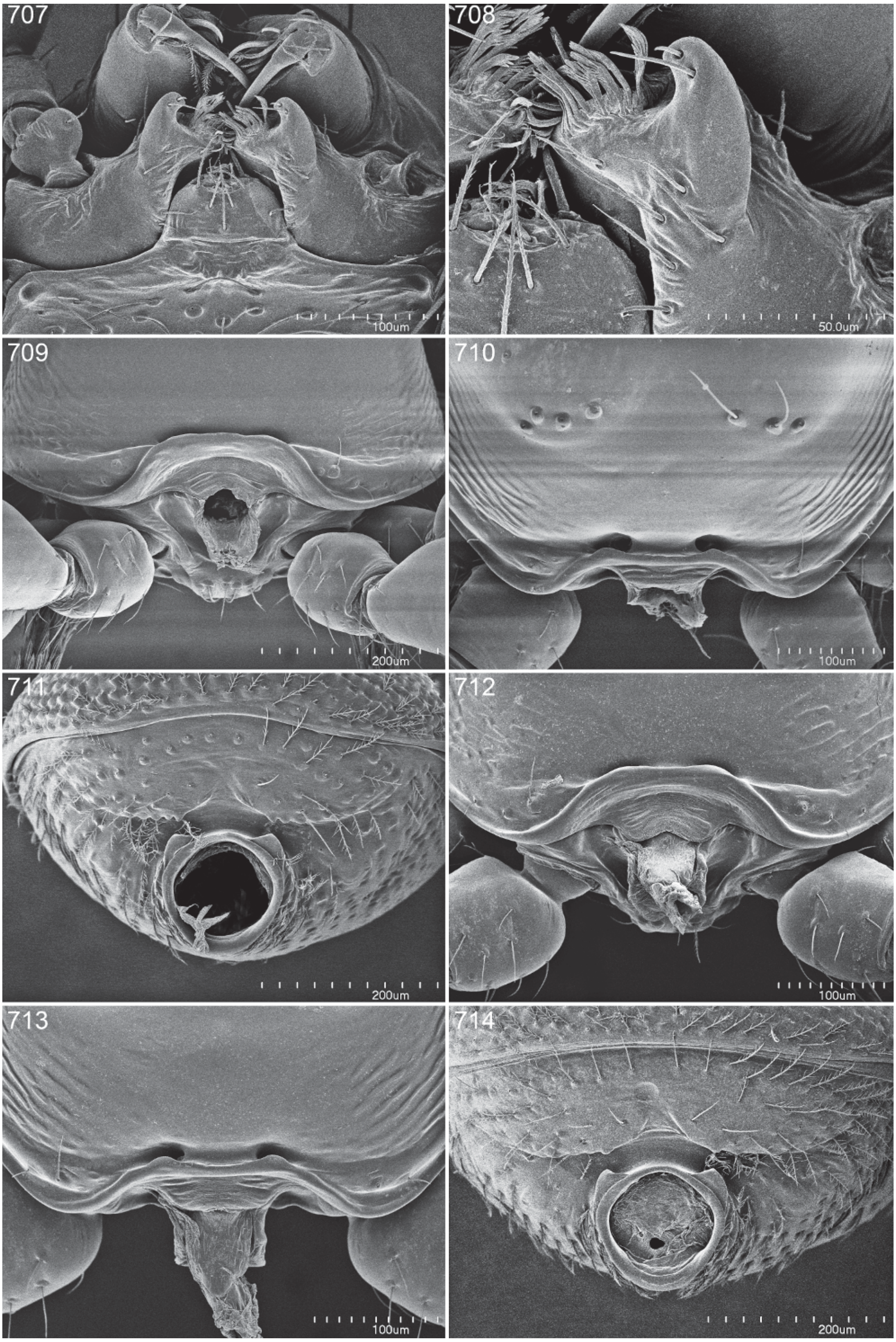
Figs. 699–706. *Brignolia gading*, new species, male. **699, 703.** Left palp, prolateral view. **700, 704.** Same, retrolateral view. **701.** Left palpal bulb, prolateral view. **702.** Same, retrolateral view. **705.** Left embolus, dorsal view. **706.** Same, ventral view.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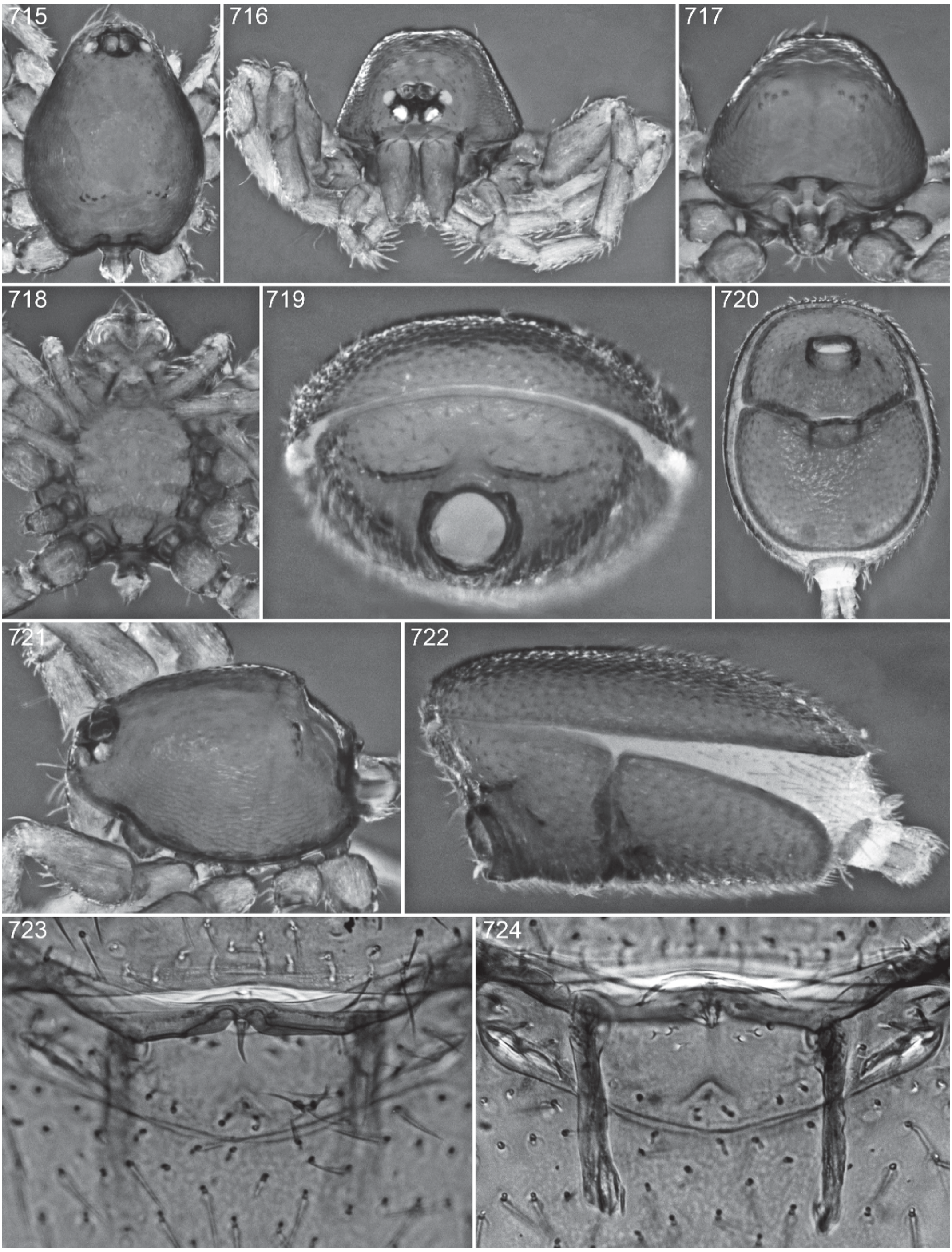
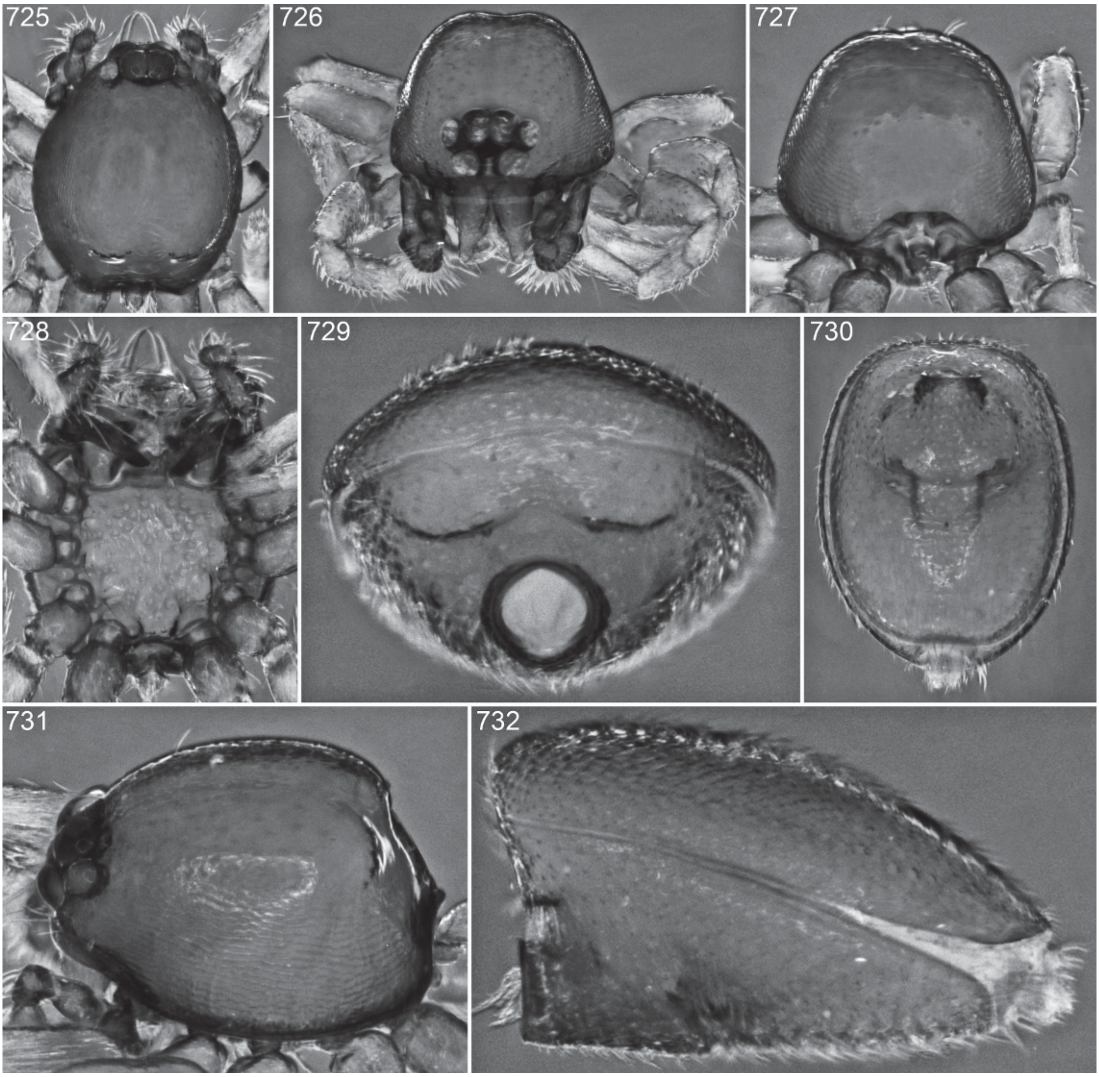
Figs. 707–714. *Brignolia gading*, new species, male (707–711) and female (712–714). **707.** Labium and endites, ventral view. **708.** Tip of endite, ventral view. **709, 712.** Carapace, posterior view. **710, 713.** Posterior margin of carapace, dorsal view. **711, 714.** Abdomen, anterior view.



Figs. 715–724. *Brignolia gading*, new species, female. **715.** Carapace, dorsal view. **716.** Same, anterior view. **717.** Same, posterior view. **718.** Cephalothorax, ventral view. **719.** Abdomen, anterior view. **720.** Same, ventral view. **721.** Carapace, lateral view. **722.** Abdomen, lateral view. **723.** Genitalia, ventral view. **724.** Same, dorsal view.



Figs. 725–732. *Brignolia elongata*, new species, male. **725.** Carapace, dorsal view. **726.** Same, anterior view. **727.** Same, posterior view. **728.** Cephalothorax, ventral view. **729.** Abdomen, anterior view. **730.** Same, ventral view. **731.** Carapace, lateral view. **732.** Abdomen, lateral view.

Burckhardt, MHNG PBI_OON 15252), 1♂; Santubong Peninsula, Permai Camp, 1°45′30″N, 110°19′47″E, May 19–21, 2007, elev. 10–250 m (A. Schultz, MHNG PBI_OON 16107), 1♂, 1♀.

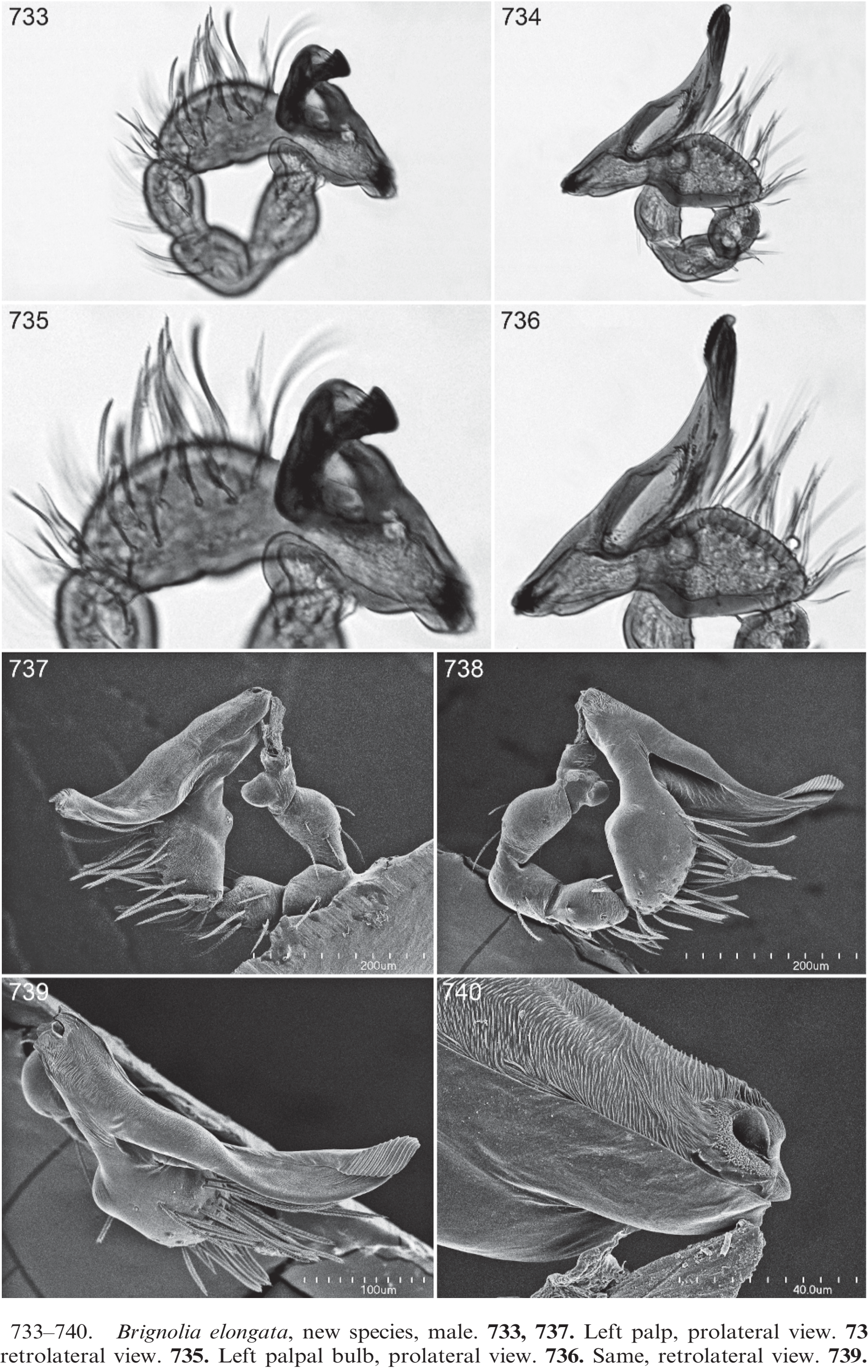
DISTRIBUTION: Borneo (Sarawak).

Brignolia elongata, new species
Figures 725–760

TYPES: Male holotype and female paratype taken in primary forest at an elevation of 250–500 m in Gunung Gading National Park, near Lundu, 1°41′17″N, 109°51′05″E, Sarawak (May 30–June 1, 2007; A. Schultz), deposited in MHNG (PBI_OON 16112).

ETYMOLOGY: The specific name refers to the highly elongated male and female genitalia.

DIAGNOSIS: This highly autapomorphic species has the most unusual genitalia in the group; both the male palpal bulb (figs. 733–740) and the female genitalia (figs. 757–760)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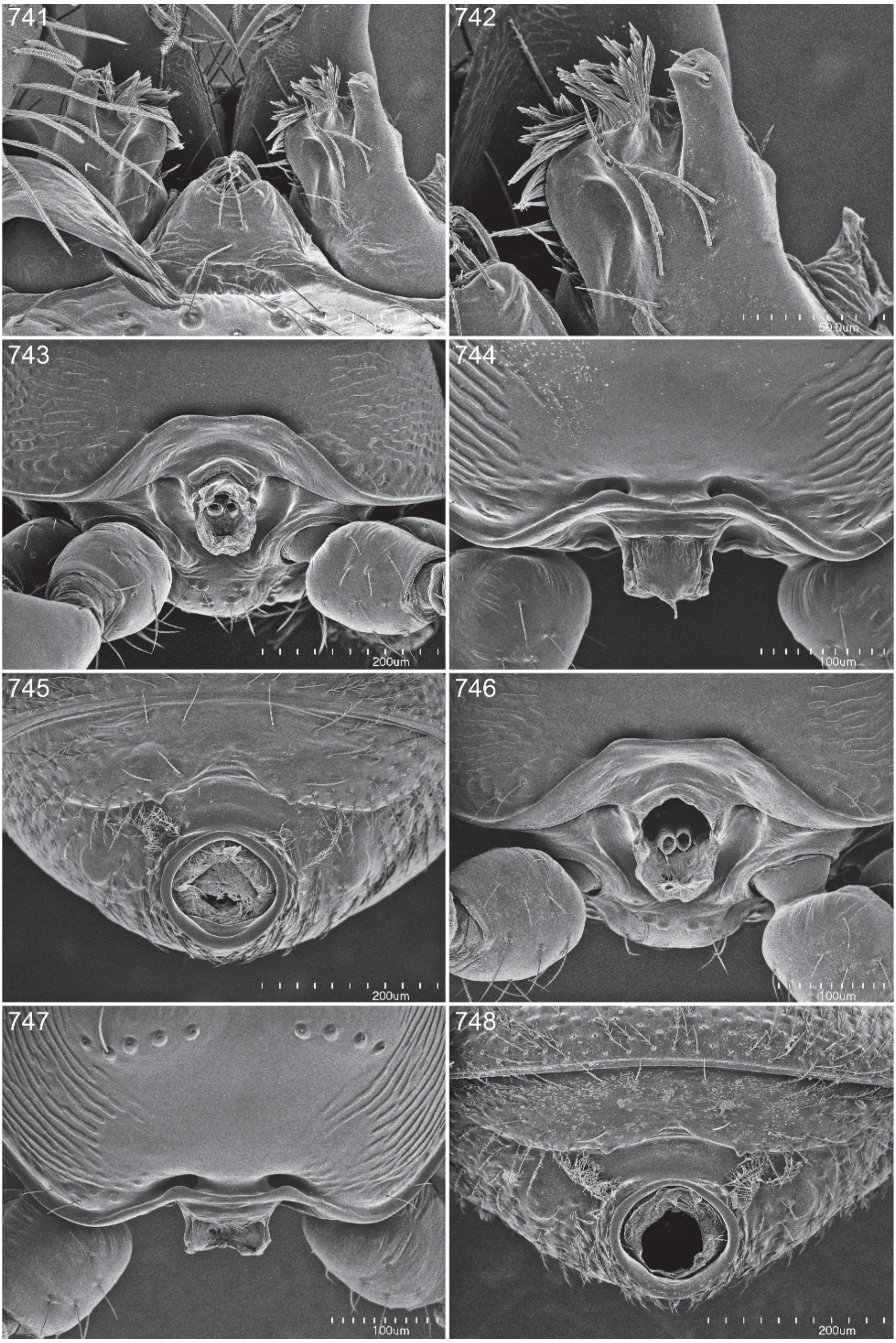
Figs. 733–740. *Brignolia elongata*, new species, male. **733, 737.** Left palp, prolateral view. **734, 738.** Same, retrolateral view. **735.** Left palpal bulb, prolateral view. **736.** Same, retrolateral view. **739.** Same, dorsal view. **740.** Embolus, prolateral view.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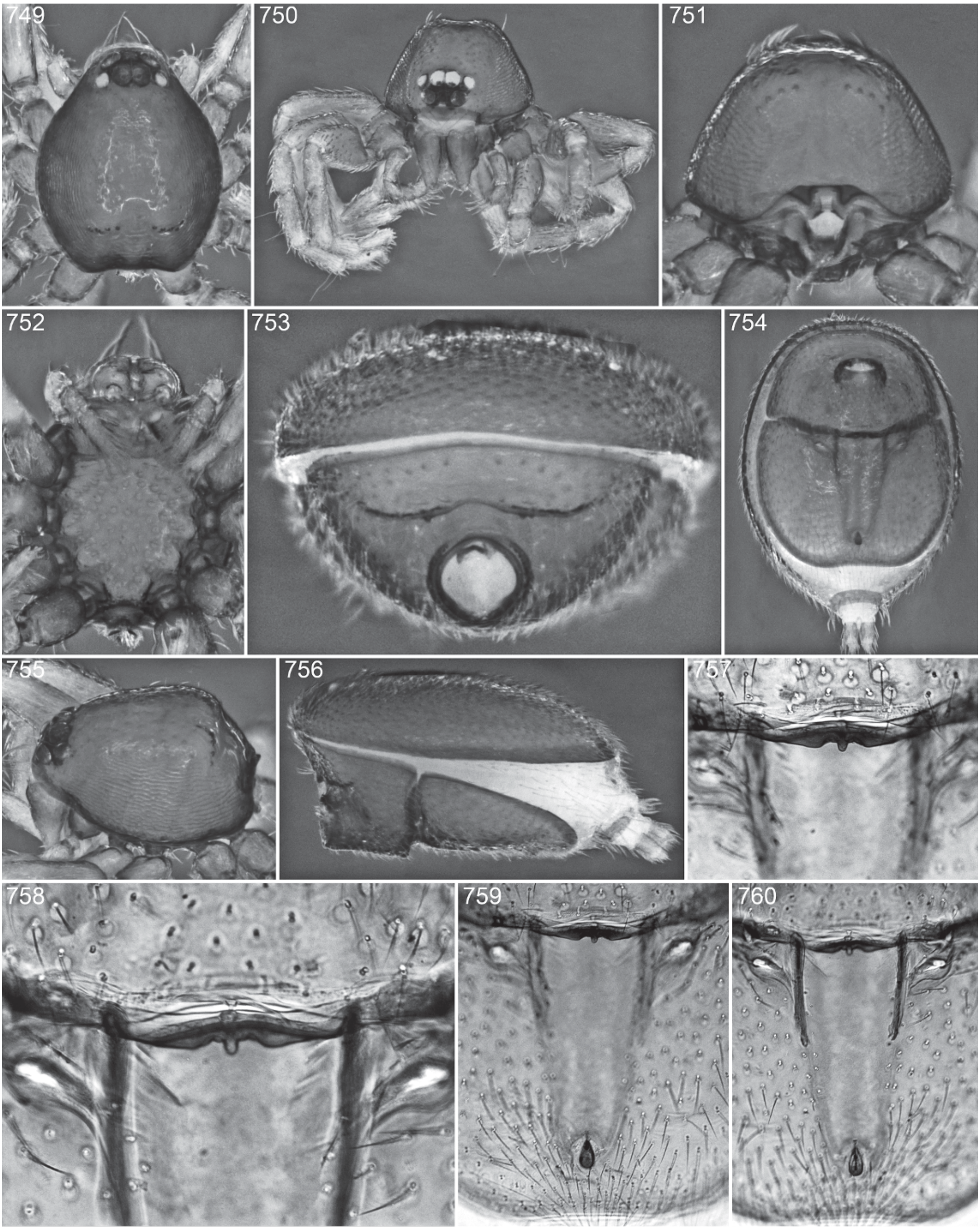
Figs. 741–748. *Brignolia elongata*, new species, male (741–745) and female (746–748). **741.** Labium and endites, ventral view. **742.** Tip of endite, ventral view. **743, 746.** Carapace, posterior view. **744, 747.** Posterior margin of carapace, dorsal view. **745, 748.** Abdomen, anterior view.



Figs. 749–760. *Brignolia elongata*, new species, female. **749.** Carapace, dorsal view. **750.** Same, anterior view. **751.** Same, posterior view. **752.** Cephalothorax, ventral view. **753.** Abdomen, anterior view. **754.** Same, ventral view. **755.** Carapace, lateral view. **756.** Abdomen, lateral view. **757.** Anterior portion of genitalia, ventral view. **758.** Same, dorsal view. **759.** Genitalia, ventral view. **760.** Same, dorsal view.

are highly elongated, so much so that the palpal bulb folds back on itself and the female genitalia extend almost the entire length of the postepigastric scutum.

MALE (PBI_OON 16112, figs. 725–745): Total length 1.47. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, but tubercles not enlarged, posterior margin squared, with pair of dark triangular sclerotizations. Sternum covered with large round pits, with distinct posterior ridge. Scuto-pedicel region with deeply W-shaped scutal ridge, with single tubercle opposite area are of pedicel triangles, which are absent. Palpal bulb enormously elongated, with reflexed, elongated dorsal extension.

FEMALE (PBI_OON 16112, figs. 746–760): Total length 1.48. Genitalia enormously elongated, occupying most of abdominal length; posterior tube enlarged, elongated, reaching almost to rear of postepigastric sclerite.

OTHER MATERIAL EXAMINED: BORNEO: **Sarawak:** Gunung Gading National Park, near Lundu, 1°41′17″N, 109°51′05″E, May 30–June 1, 2007, primary forest, elev. 250–500 m (A. Schultz, MHNG PBI_OON 16112), 14♂, 17♀; Matang Mountain, Serapi, Jan. 12, 1984, wet litter, primary forest, elev. 400 ft (NML PBI_OON 31739), 1♂, 1♀; Matang Reserve, Mar. 25–Apr. 4, 1985, elev. 1000 ft (C., P. Deeleman, NML PBI_OON 31742), 4♂, 3♀, Apr. 4, 1985, litter, elev. 400 ft (C., P. Deeleman, NML PBI_OON 31590), 1♂.

DISTRIBUTION: Borneo (Sarawak).

Brignolia kapit, new species
Figures 761–794

TYPES: Male holotype and female allotype taken at an elevation of 900–950 m at Poring Hot Springs, Langanan Falls, Sabah (May 12, 1987; D. Burckhardt, I. Löbl), deposited in MHNG (PBI_OON 12215).

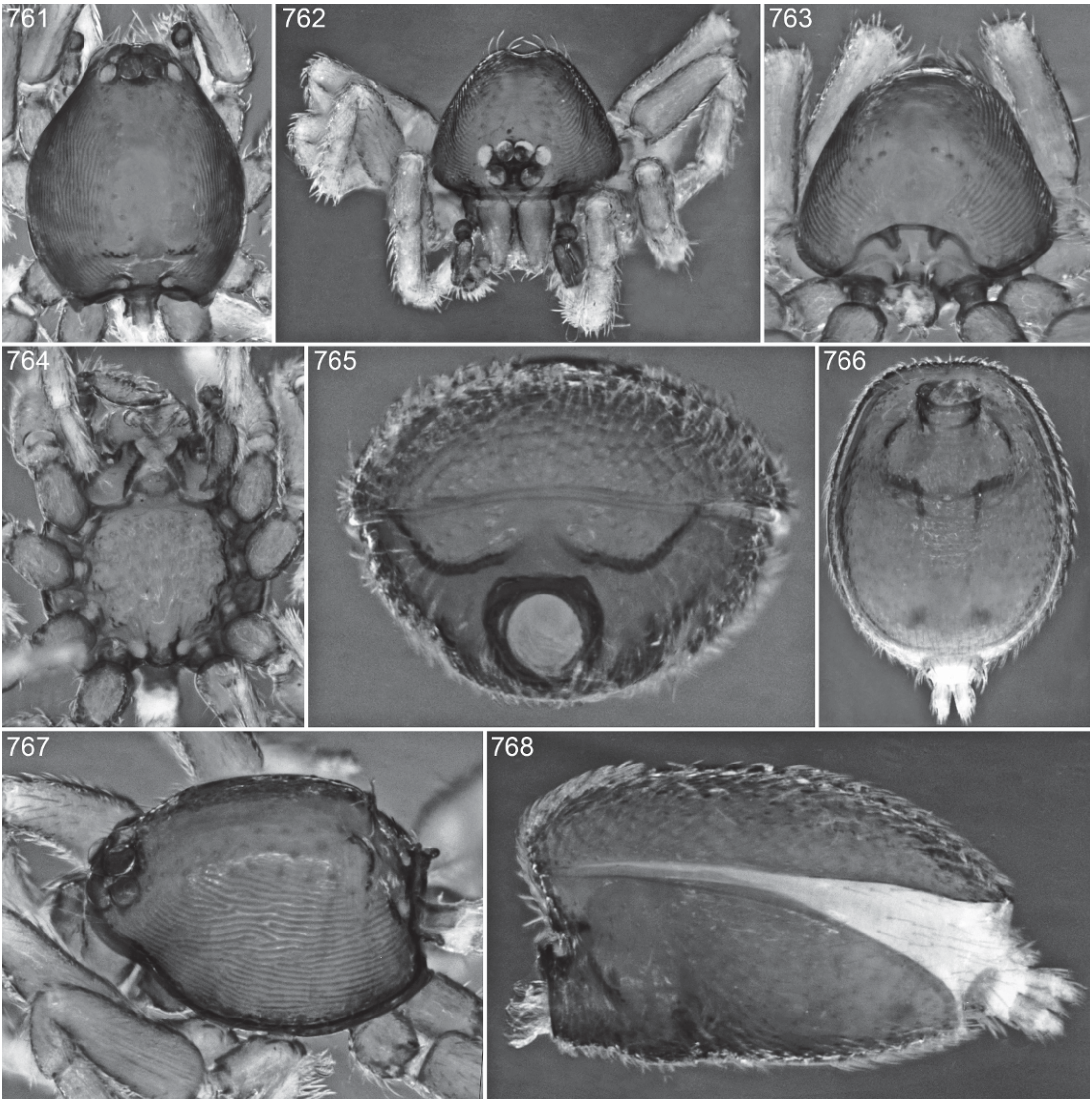
ETYMOLOGY: The specific name is an arbitrary combination of letters.

DIAGNOSIS: Both sexes can easily be recognized by the posterolateral extensions on the posterior carapace margin (figs. 767, 779, 782, 783, 791); males have a bluntly tipped embolus (figs. 769–776) and females have a posterior notch in the posterior margin of the epigastric furrow (fig. 793) and a short, bifid posterior tube (fig. 794).

MALE (PBI_OON 12215, figs. 761–781): Total length 1.76. Carapace orange-brown, without any pattern; pars cephalica strongly elevated in lateral view; posterolateral edge with pair of pits, posterior declivity with distinct shoulders, tubercles not enlarged, but posterolateral edge of carapace with sharp tubercles, posterior margin squared, with paired dark triangular sclerotizations. Sternum covered with large round pits, with distinct posterior ridge. Scuto-pedicel region with deeply W-shaped scutal ridge bearing few tiny, sharply pointed tubercles opposite pedicel triangles set on anterolaterally enlarged pedicel margin. Palpal bulb dorsally scooped, with beaklike tip.

FEMALE (PBI_OON 12215, figs. 782–794): Total length 1.76. Postepigastric region with weak, procurved ridge situated near epigastric furrow: posterior tube short, posteriorly widened.

OTHER MATERIAL EXAMINED: BORNEO: **Brunei:** *Temburong Dist.:* Ashton Trail near Kuala Belalong Field Studies Centre, 21 km SSW Bangar, 4°32.513′N, 115°09.300″E, Oct. 1, 2009, sifting leaf litter, primary mixed dipterocarp forest, elev. 100–150 m (C. Griswold, N. Chousou Polydouri, CAS 36046, PBI_OON 36306), 1♂, 1♀, same, Oct. 3, 2009, Winkler trap (CAS 35153, 35154, 35157, PBI_OON 36334, 36339, 36340), 3♂, 2♀, same, Oct. 4–9, 2009, sifting leaf litter (CAS 29855, PBI_OON 36336), 1♂. **Sabah:** Danum Valley, May 6–16, 1991 (C., P. Deeleman, NML PBI_OON 31577), 1♂, 2♀; Kimabalu National Park, May 1–5, 1991, leaf litter, elev. 1500 m (C., P. Deeleman, NML PBI_OON 31572), 1♂, 2♀; Mt. Kinabalu, Apr. 24, 1987, elev. 1550–1650 m (D. Burckhardt, I. Löbl, MHNG PBI_OON 12272, 12300), 2♂, 2♀, Apr. 28–29, 1987, elev. 1550 m (D. Burckhardt, I. Löbl, MHNG PBI_OON 12301, 12310), 1♂, 1♀; E Mt. Kinabalu, road between Ranau and Kota Kinabalu, May 24, 1987, elev. 1150 m (D. Burckhardt, I. Löbl, MHNG PBI_OON 12356), 1♂, 1♀; Poring Hot Springs, May 6, 1987, elev. 500 m (D. Burckhardt, I. Löbl, MHNG PBI_OON



Figs. 761–768. *Brignolia kapit*, new species, male. **761.** Carapace, dorsal view. **762.** Same, anterior view. **763.** Same, posterior view. **764.** Cephalothorax, ventral view. **765.** Abdomen, anterior view. **766.** Same, ventral view. **767.** Carapace, lateral view. **768.** Abdomen, lateral view.

12331), 1♀; Poring Hot Springs, Langanan Falls, May 12, 1987, elev. 900–950 m (D. Burckhardt, I. Löbl, MHNG PBI_OON 12215, 12373), 1♂, 4♀; Poring Hot Springs, Langanan River, May 14, 1987, elev. 850 m (D. Burckhardt, I. Löbl, MHNG PBI_OON 12201), 1♂. **Sarawak:** Tr. Nawin at confluence of Suan Oyan River and Mujong River, E Kapit, May 19, 1994, sifting vegetational debris in secondary mixed dipterocarp forest along ridge, elev. 150 m (I. Löbl, D. Burckhardt, MHNG PBI_OON 15892), 1♂.

DISTRIBUTION: Borneo (Brunei, Sabah, and Sarawak).

ACKNOWLEDGMENTS

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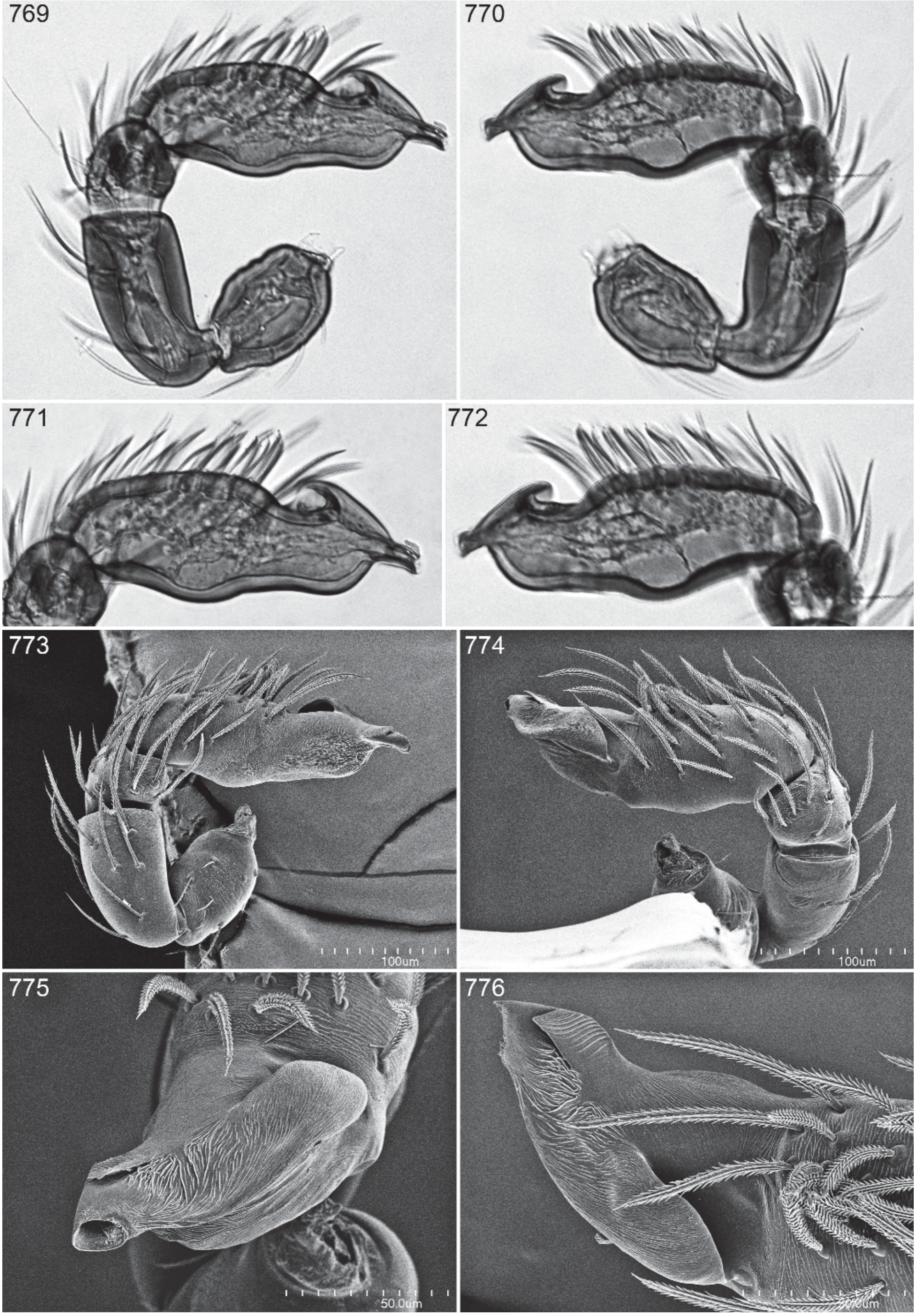
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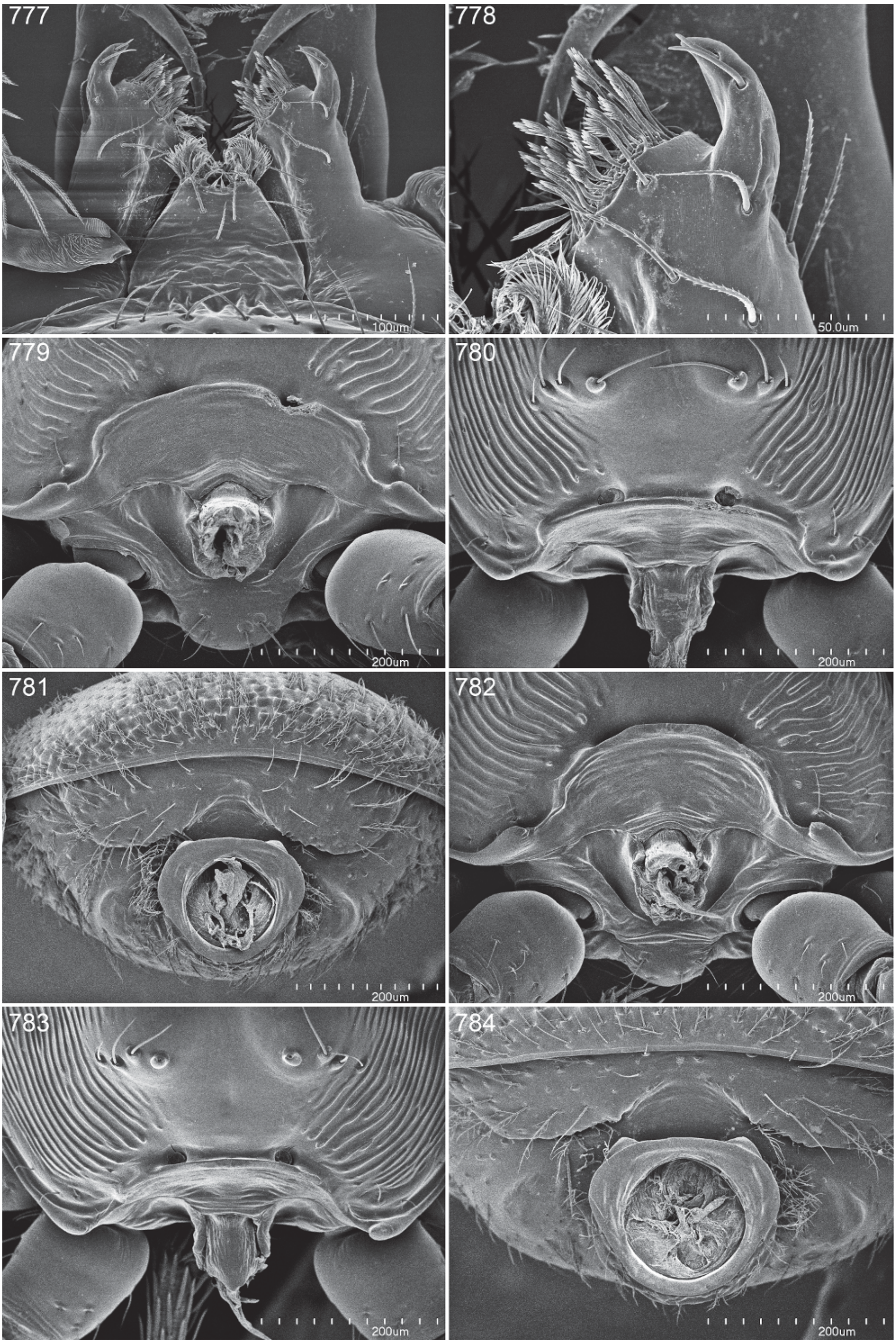
Figs. 769–776. *Brignolia kapit*, new species, male. **769, 773.** Left palp, prolateral view. **770, 774.** Same, retrolateral view. **771.** Left palpal bulb, prolateral view. **772.** Same, retrolateral view. **775.** Embolus, ventral view. **776.** Same, dorsal view.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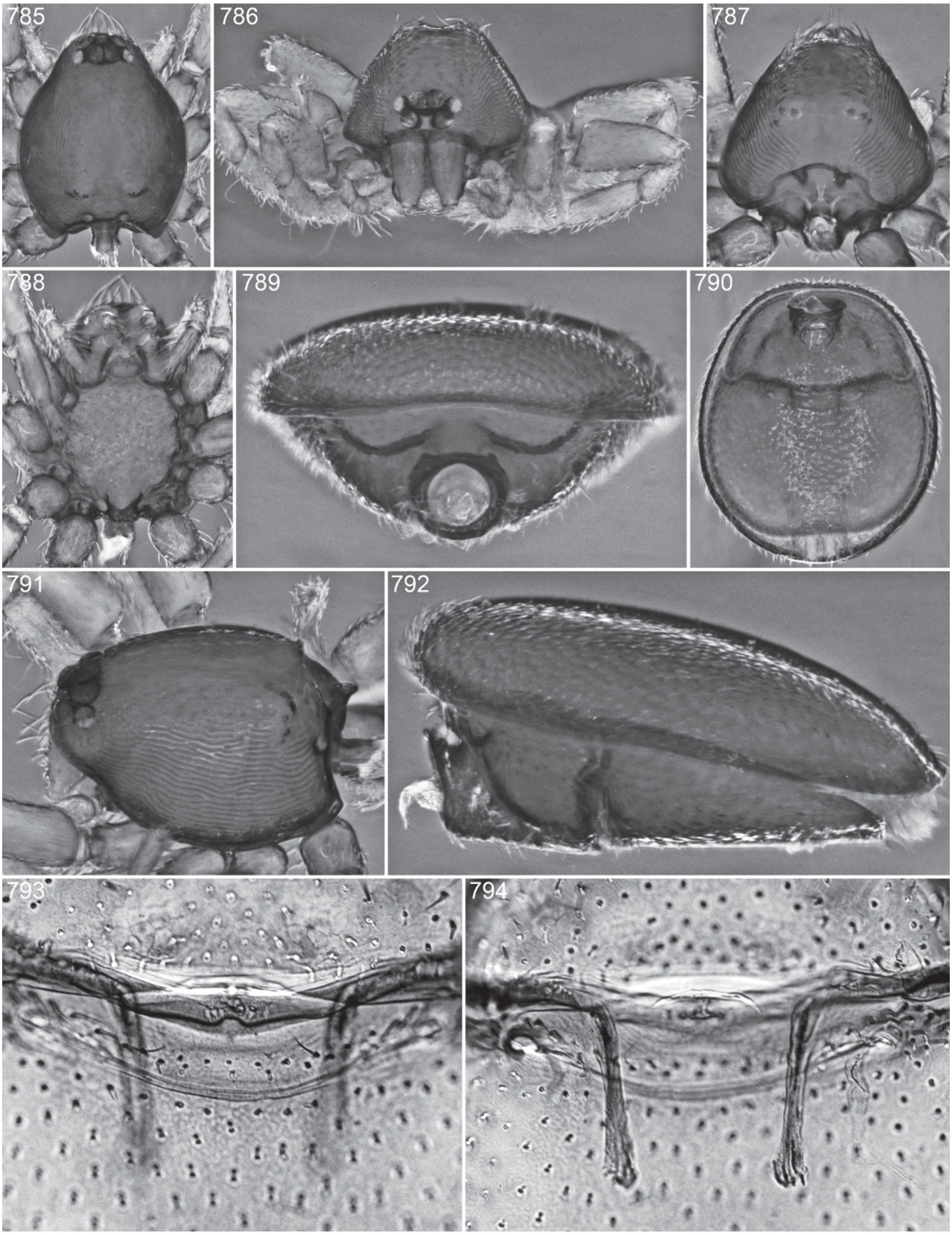
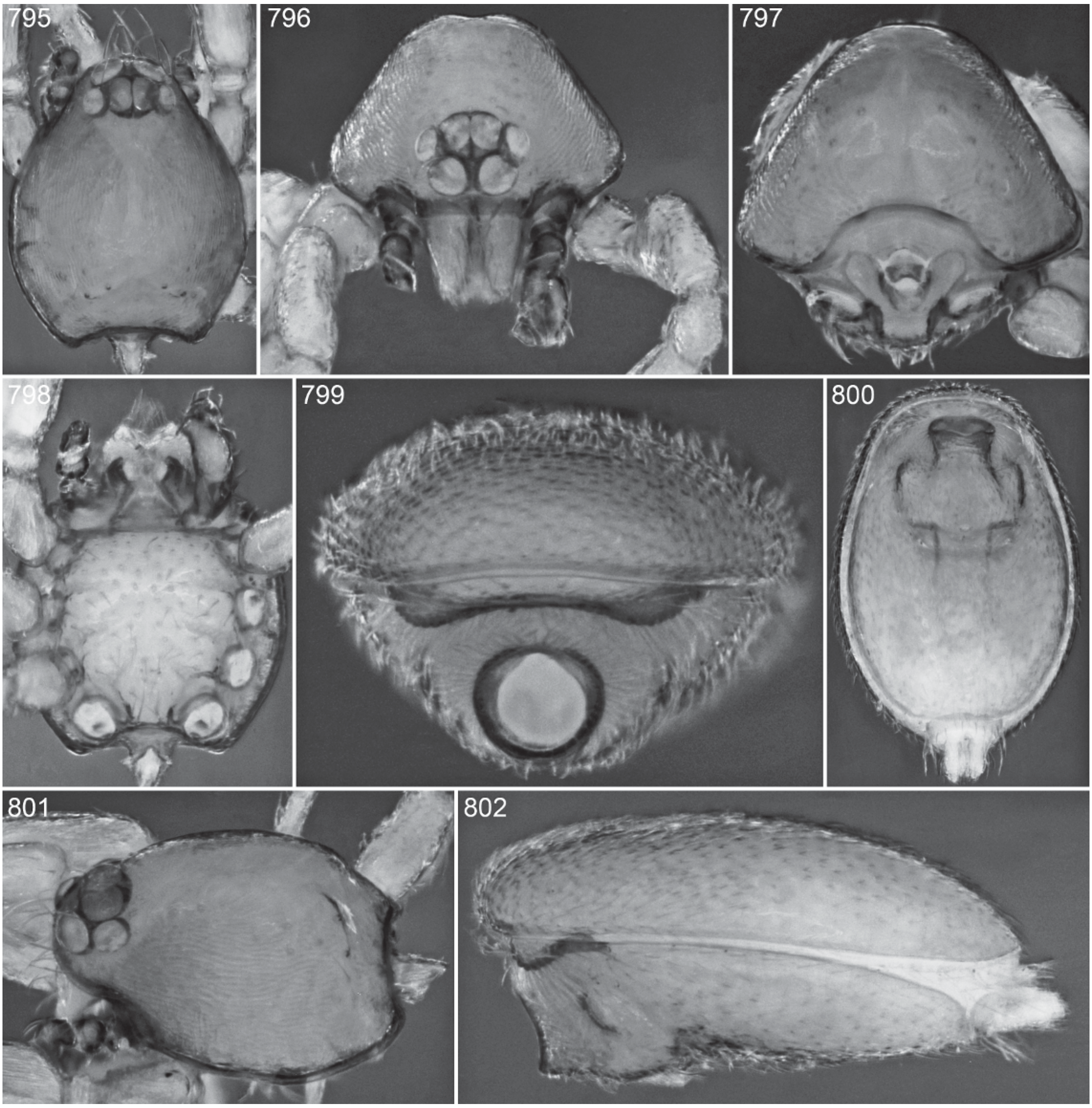
Figs. 777–784. *Brignolia kapit*, new species, male (777–781) and female (782–784). **777.** Labium and endites, ventral view. **778.** Tip of endite, ventral view. **779, 782.** Carapace, posterior view. **780, 783.** Posterior margin of carapace, dorsal view. **781, 784.** Abdomen, anterior view.

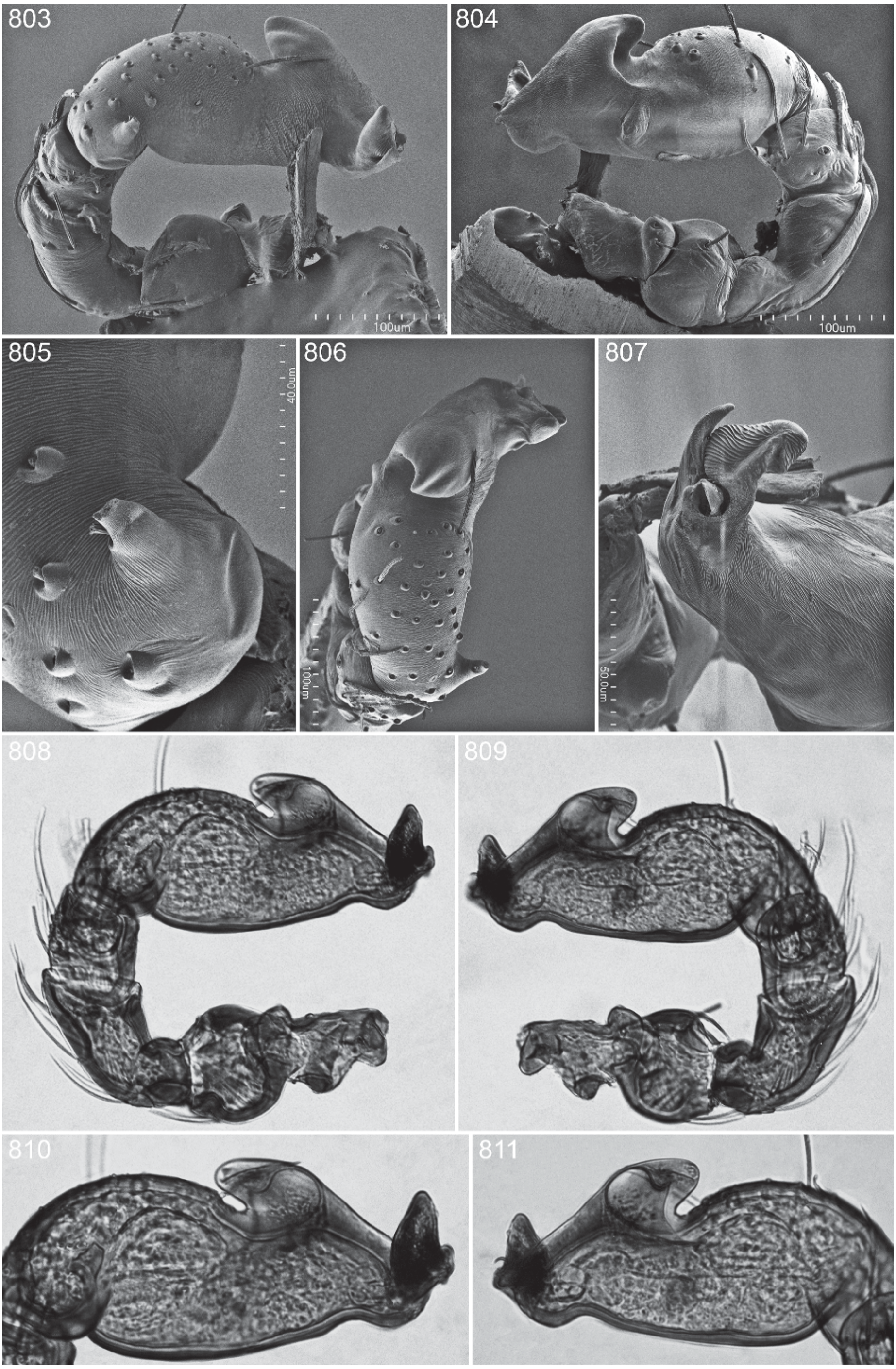


Figs. 785–794. *Brignolia kapit*, new species, female. **785.** Carapace, dorsal view. **786.** Same, anterior view. **787.** Same, posterior view. **788.** Cephalothorax, ventral view. **789.** Abdomen, anterior view. **790.** Same, ventral view. **791.** Carapace, lateral view. **792.** Abdomen, lateral view. **793.** Genitalia, ventral view. **794.** Same, dorsal view.



Figs. 795–802. *Brignolia nigripalpis* (Simon), male. **795.** Carapace, dorsal view. **796.** Same, anterior view. **797.** Same, posterior view. **798.** Cephalothorax, ventral view. **799.** Abdomen, anterior view. **800.** Same, ventral view. **801.** Carapace, lateral view. **802.** Abdomen, lateral view.

and organizations in several other countries; the assistance of the many participants in that project is immensely appreciated. We thank Don Cameron for etymological advice and translations of Simon's Latin descriptions, Mark Harvey for advice on the availability of *Brignolia*, and Alexander Sánchez, Abel Pérez, and Giraldo Alayón for their collaboration in the fieldwork in Cuba that provided the initial impetus for this study. We are indebted to the curators and collectors who have supplied specimens: J.A. Beatty (JAB), Janet Beccaloni (BMNH), Gonzalo Giribet and Laura Leibensperger (MCZ), Charles Griswold and Darrell Ubick (CAS), Rudy Jocqué and Wouter Fannes (MRAC), Seppo Koponen (ZMUT), Jeremy Miller and Christa Deeleman (NML), John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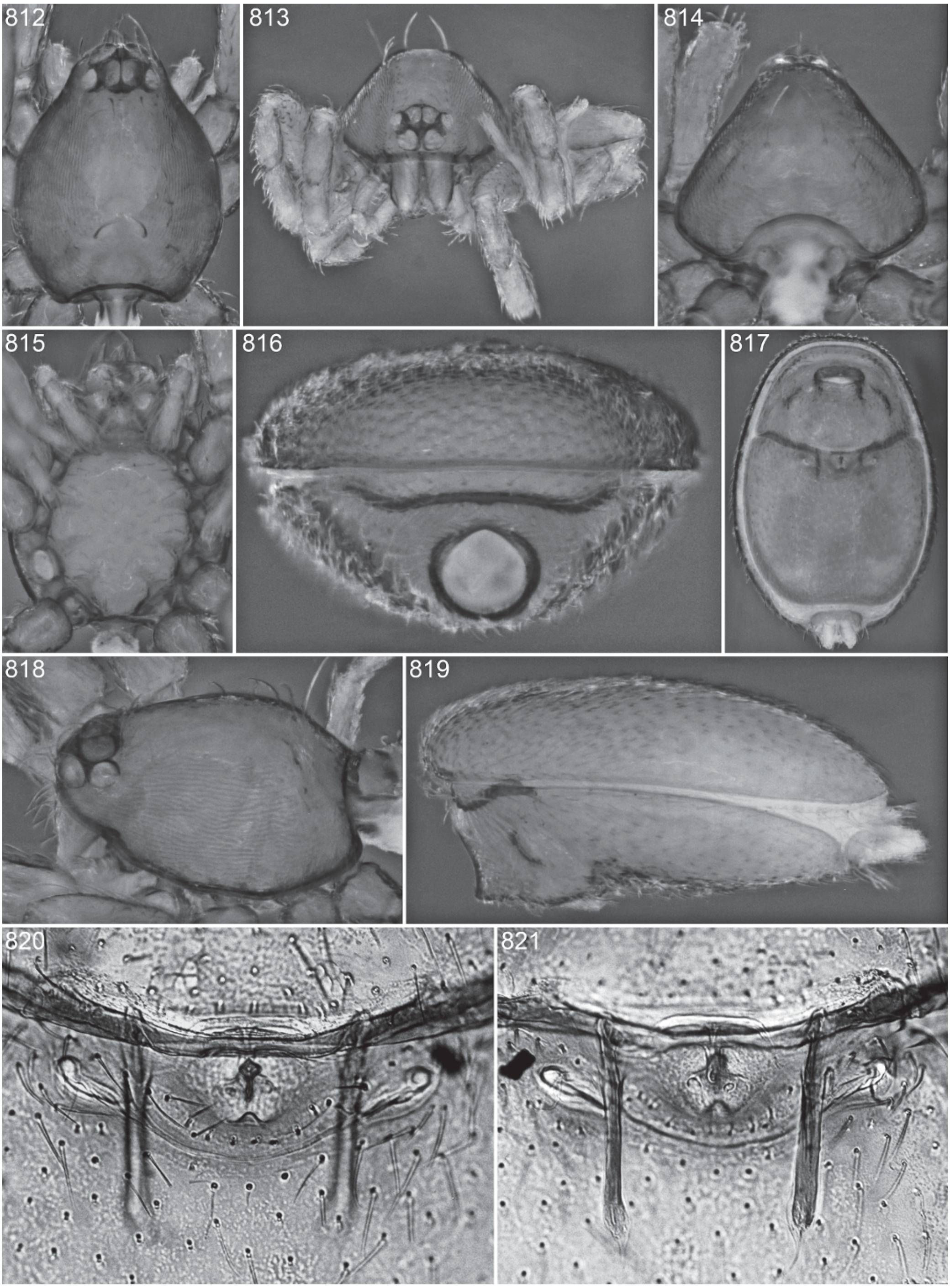
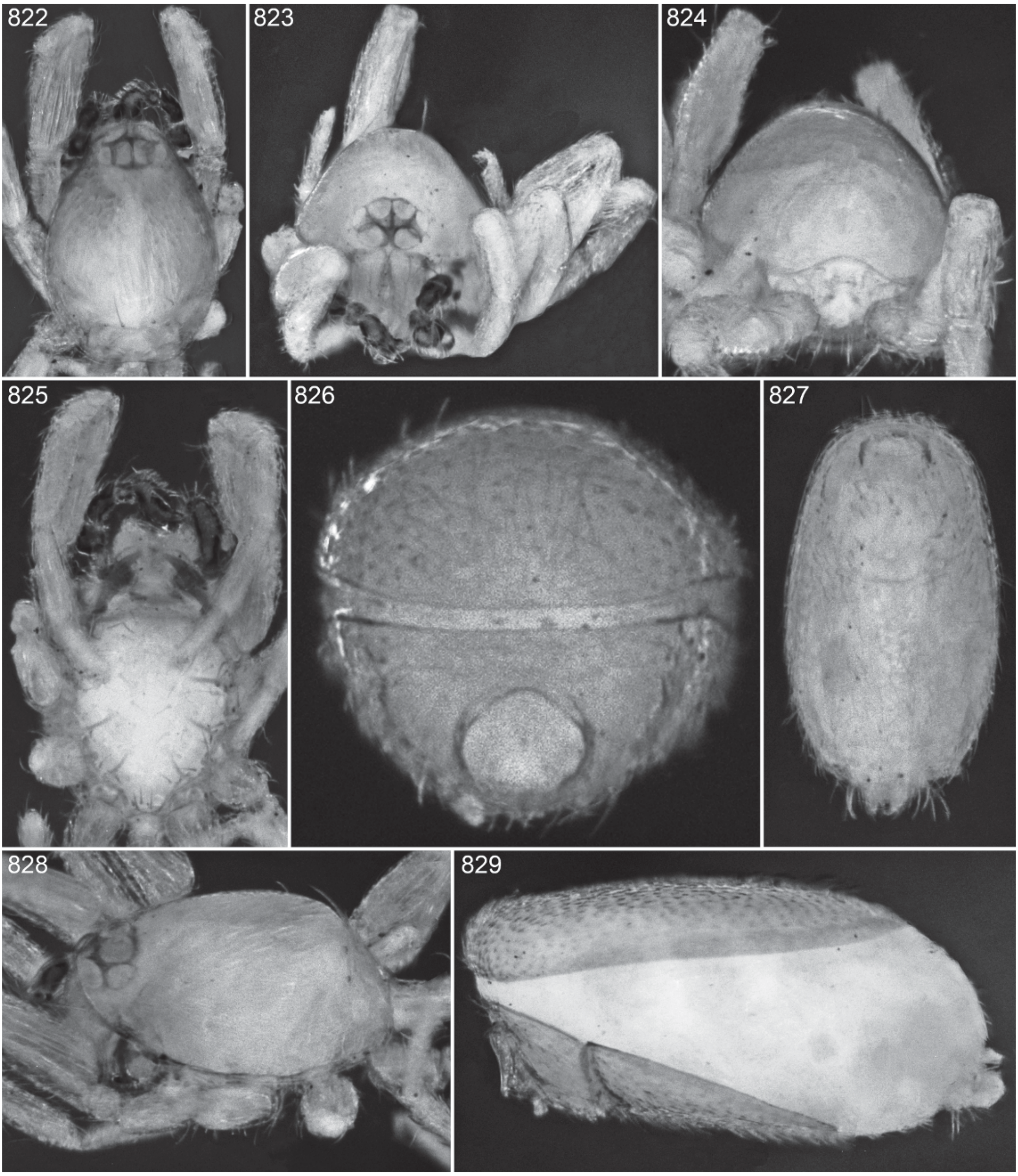
Figs. 803–811. *Brignolia nigripalpis* (Simon), male. **803, 808.** Left palp, prolateral view. **804, 809.** Same, retrolateral view. **805.** Basal portion of left palpal bulb, prolateral view. **806.** Left palpal bulb, dorsal view. **807.** Same, ventral view. **810.** Same, prolateral view. **811.** Same, retrolateral view.



Figs. 812–821. *Brignolia nigripalpis* (Simon), female. **812.** Carapace, dorsal view. **813.** Same, anterior view. **814.** Same, posterior view. **815.** Cephalothorax, ventral view. **816.** Abdomen, anterior view. **817.** Same, ventral view. **818.** Carapace, lateral view. **819.** Abdomen, lateral view. **820.** Genitalia, ventral view. **821.** Same, dorsal view.



Figs. 822–829. *Brignolia ambigua* (Simon), male. **822.** Carapace, dorsal view. **823.** Same, anterior view. **824.** Same, posterior view. **825.** Cephalothorax, ventral view. **826.** Abdomen, anterior view. **827.** Same, ventral view. **828.** Carapace, lateral view. **829.** Abdomen, lateral view.

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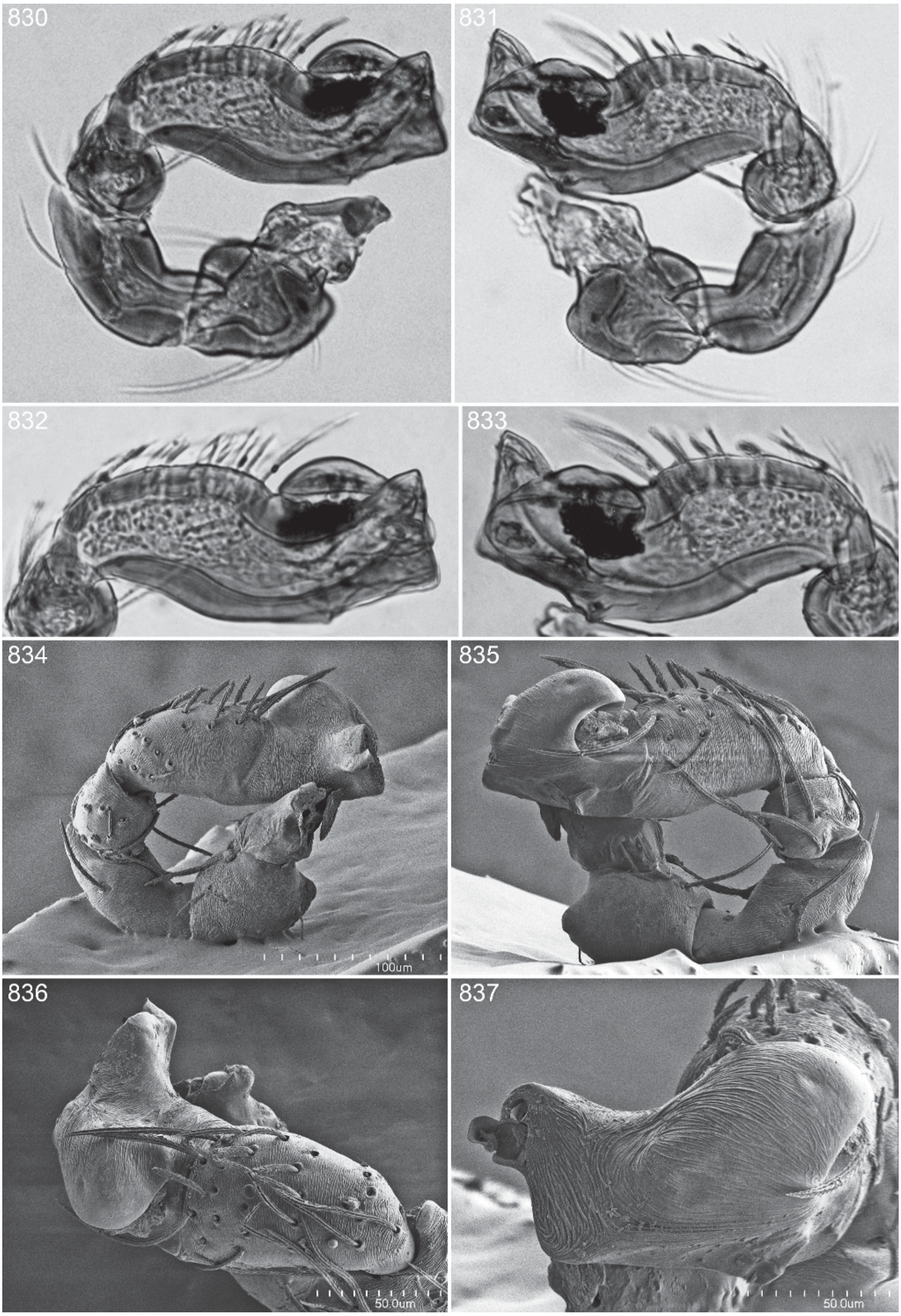
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Figs. 830–837. *Brignolia ambigua* (Simon), male. **830, 834.** Left palp, prolateral view. **831, 835.** Same, retrolateral view. **832.** Left palpal bulb, prolateral view. **833.** Same, retrolateral view. **836.** Same, dorsal view. **837.** Same, ventral view.

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INDEX OF SPECIFIC NAMES

(valid names are in italics)

ambigua, 52
ankhu, 93
assam, 92
bengal, 89
bowleri, 49
cardamom, 64
chumphae, 106
cobre, 37
cubana, 15
dasysterna, 32
diablo, 103
elongata, 116
gading, 110
jog, 82
kaikatty, 73
kapit, 120
karnataka, 83
kodaik, 79
kumily, 68
mapha, 94
nigripalpis, 51
nilgiri, 76
palawan, 108
parumpunctata, 14
perplexa, 14
ratnapura, 53
recondita, 15
rothorum, 59
schwendingeri, 107
sinharaja, 52
sukna, 92
suthep, 103
trichinalis, 43
valparai, 68